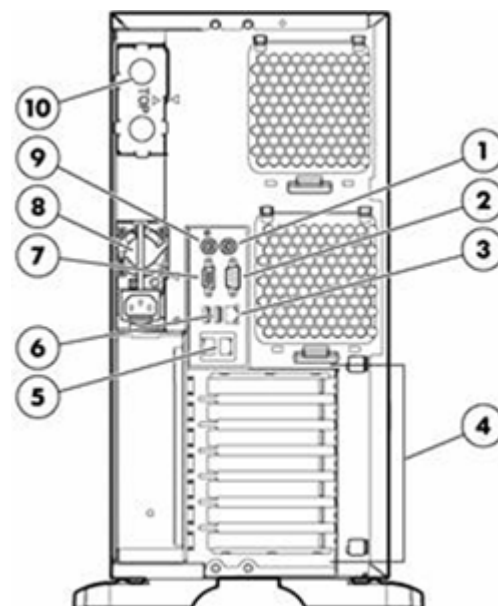
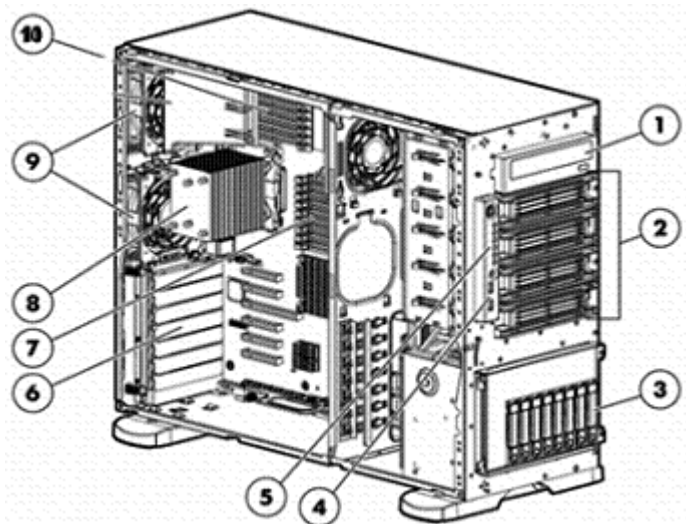


### Overview

The HP ProLiant ML350 G6 is the best price performance DP Tower server that delivers excellence with performance, expandability and availability. The G6 server has more memory capacity and HDD expandability than previous generations. It combines the latest Intel Xeon 5600 processors with QPI technology, best-in-class availability features, and unsurpassed flexibility in a system ideal for growing businesses and especially well suited to meet the needs of remote branch offices.



#### Front View:

1. SATA DVD ROM or DVD RW optical drive
2. Four (4) removable media bays
3. Eight (8) SFF (2.5") (shown) or six (6) LFF (3.5") SAS or SATA hot plug drive bays
4. Two (2) USB ports
5. LEDs: System power, Health, Power cap, NIC 1&2, UID
6. Six (6) expansion slots
7. Nine (9) DIMM slots (Processor 2): DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory
8. Processor heatsink
9. System fans
10. Nine (9) DIMM slots (Processor 1): DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory

#### Rear View:

1. PS/2 mouse port
2. Serial port
3. Dedicated remote management port
4. Six (6) expansion slots
5. Two (2) network ports
6. Two (2) USB ports
7. Video port
8. Power supply bay 1
9. PS/2 keyboard port
10. Power supply bay 2

### What's New

- Support for Intel's latest 5600 series processors

## Standard Features

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

### Processor

One of the following  
depending on Model

### Six-Core Processors

- Intel® Xeon® Processor X5675 (3.06 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor E5649 (2.53 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor E5645 (2.40 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)

### Quad-Core Processors

- Intel® Xeon® Processor X5672 (3.20 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo (1/1/2/2)
- Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo
- Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo
- Intel® Xeon® Processor E5607 (2.26 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor E5606 (2.13 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® Processor E5603 (1.60 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)
- Intel® Xeon® processor X5570 (2.93 GHz, 8MB L3 cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)
- Intel® Xeon® processor X5560 (2.80 GHz, 8MB L3 cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)
- Intel® Xeon® processor X5550 (2.66 GHz, 8MB L3 cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)
- Intel® Xeon® processor E5540 (2.53 GHz, 8MB L3 cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
- Intel® Xeon® processor E5530 (2.40 GHz, 8MB L3 cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
- Intel® Xeon® processor E5520 (2.26 GHz, 8MB L3 cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
- Intel® Xeon® Processor E5507 (2.26 GHz, 4MB L3 Cache, 80W, DDR3-800)
- Intel® Xeon® processor E5506 (2.13 GHz, 4MB L3 cache, 80W, DDR3-800)
- Intel® Xeon® processor E5504 (2.00 GHz, 4MB L3 cache, 80W, DDR3-800)
- Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2)
- Intel® Xeon® processor L5520 (2.26 GHz, 8MB L3 cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)
- Quad-Core Intel® Xeon® Processor L5506 (2.13 GHz, 4MB cache, QPI 4.8GT/s)

Standard Features

Dual-Core Processors

Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® processor E5502 (1.86 GHz, 4MB L3 cache, 80W, DDR3-800)

**NOTE:** HT indicates that the processor model supports Intel® Hyper-Threading Technology.

**NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active.

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

**NOTE:** For the Intel 5600 and 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

**NOTE:** Customers transitioning from 5500 series processors to 5600 series processors must include a third fan along with the two fans present on the server

**Cache Memory**  
One of the following  
depending on Model

12MB (1 x 12MB) Level 3 cache  
**NOTE:** For 5600 series processors

8MB (1 x 8MB) Level 3 cache  
**NOTE:** For X5570/X5560/X5550/E5540/E5530/E5520/L5520 processors

4MB (1 x 4MB) Level 3 cache  
**NOTE:** For E5507/E5506/E5504/E5503/E5502/L5506 processors

**Chipset**

Intel® 5520 Chipset  
**NOTE:** For more information regarding Intel® chipsets, please see the following URL:  
<http://www.intel.com/products/server/chipsets/>.

**Upgradeability**

Upgradeable to two processors  
**NOTE:** total 4, 8 or 12 cores

**Memory Protection**

Advanced ECC  
Mirroring mode  
Lock-step mode  
Online Spare (Requires X5600 or E5600 processor family)

**Memory**  
One of the following  
depending on model

|                               |   |
|-------------------------------|---|
| Type                          | DDR3 Registered (RDIMM) or Unbuffered (UDIMM)           |
| Standard (Performance Models) | 12 GB (6 x 2 GB) RDIMM                                  |
| Standard (Base Models)        | 6 GB (3 x 2 GB) RDIMM                                   |
| Standard (Entry Models)       | 4 GB (2 x 2 GB) RDIMM                                   |
| Standard (Entry Models)       | 4 GB (1 x 4 GB) RDIMM                                   |
| Maximum (RDIMM)               | 192 GB (12 x 16 GB)                                     |
| Maximum (UDIMM)               | 48 GB (12 x 4 GB)                                       |
| Maximum (RDIMM)               | 144 GB (18 x 8 GB) for Registered Memory configurations |

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** The 16 GB memory module is a quad ranked 800MHz DDR3 memory.



Standard Features

Network Controller      Embedded NC326i PCI Express Dual Port Gigabit Server Adapter

Expansion Slots

| Expansion Slot # | Technology       | Bus Width | Connector Width | Bus Number | Form Factor            | Notes |
|------------------|------------------|-----------|-----------------|------------|------------------------|-------|
| 6                | PCI Express Gen2 | x4        | x8              | 5          | Standard Height/Length |       |
| 5                | PCI Express Gen2 | x4        | x8              | 8          | Standard Height/Length |       |
| 4                | PCI Express Gen2 | x8        | x16             | 11         | Standard Height/Length |       |
| 3                | PCI Express Gen2 | x8        | x8              | 14         | Standard Height/Length |       |
| 2                | PCI Express Gen2 | x4        | x8              | 17         | Standard Height/Length |       |
| 1                | PCI Express Gen2 | x4        | x8              | 20         | Standard Height/Length |       |

**NOTE:** Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number

**NOTE:** Indicates the number of physical electrical lanes running to the connector.

**NOTE:** Six total expansion slots. One PCI-Express x16 Gen2 (x8 speed); One PCI-Express x8 Gen2 (x8 speed); Four PCI-Express x8 Gen2 (x4 speed). Optional PCI-X Expander provides additional two 64-bit/100-MHz PCI-X slots by using a single PCI Express slot.

|  |                    |   |
|--|--------------------|---|
| Storage Controller<br><i>One of the following depending on model</i>   | Entry Models       | Embedded HP Smart Array P410i/Zero Memory Controller (RAID 0/1/1+0)       |
|  | Base Models        | Embedded HP Smart Array P410i/256MB Controller (RAID 0/1/1+0/5/5+0)       |
|  |                    | Embedded HP Smart Array P410i/512 MB BBWC Controller (RAID 0/1/1+0/5/5+0) |
|  | Performance Models | Embedded HP Smart Array P410i/1GB FBWC Controller                         |
| Available upgrades: 256MB, 512MB with BBWC, Battery kit upgrade (for BBWC), and Smart Array Advanced Pack (SAAP) |                    |   |

|                          |                |   |
|--------------------------|----------------|---|
| Internal Storage Devices | Diskette Drive | None included standard (not supported)    |
|                          | Optical Drives | HP Half-Height SATA DVD-ROM Optical Drive |
|                          | Hard Drives    | None standard                             |

|  |                   |      |            |
|--|-------------------|------|------------|
| Maximum Internal Storage<br><i>One of the following depending on model</i> | Hot Plug LFF SAS  | 16TB | 8 x 2TB    |
|  | Hot Plug LFF SATA | 16TB | 8 x 2TB    |
|  | Hot Plug SFF SAS  | 8TB  | 16 x 500GB |
|  | Hot Plug SFF SATA | 8TB  | 16 x 500GB |

Standard Features

|  |                         |                                 |
|--|-------------------------|---------------------------------|
| Interfaces   | Serial                  | 1                               |
|  | Pointing Device (Mouse) | 1                               |
|  | Graphics                | 1                               |
|  | Keyboard                | 1                               |
|  | Network RJ-45           | 3 (1 dedicated for iLO)         |
|  | USB 2.0 Ports           | 6 (2 front, 2 rear, 2 internal) |
| <b>NOTE:</b> Please see the following URL for additional information regarding USB support:<br><a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a> . |                         |                                 |

|                              |                                |
|------------------------------|--------------------------------|
| Industry Standard Compliance | ACPI V2.0 Compliant            |
|                              | PCI-Express Gen2               |
|                              | PXE Support                    |
|                              | WOL Support                    |
|                              | PCI-X 1.0a Compliant           |
|                              | Novell Certified               |
|                              | Microsoft® Logo certifications |
|                              | USB 2.0 Support                |
| SMBIOS 2.6.1                 |                                |

|                    |  |
|--------------------|--|
| Server Power Cords | ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V US wall outlets in a home or office. These servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' country specific NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix:<br><a href="http://www.hp.com/go/powercordmatrix">http://www.hp.com/go/powercordmatrix</a> . |
|--------------------|--|

|              |   |
|--------------|---|
| Power Supply | HP 750W CS HE Gold Power Supply (standard on some models) |
|              | HP 460W CS HE Gold Power Supply (standard on some models) |

### Standard Features

#### Common Slot Power Supplies

HP has a new design for ProLiant power- the new Common Slot Power Supply bay. This design provides the customer with commonality in power supplies across multiple platforms to save on the cost of spares and allows HP to offer multiple power solutions to fit the customers' needs. Many HP ProLiant Servers come with Common Slot, High Efficiency and Right-Size Power Supplies. The new HP Common Slot power supplies are designed for the highest power efficiency without degrading performance of the ProLiant server. Power Supplies have efficiency ratings up to 92%. There are three Right Size power options available depending on the configuration of your server. To make sure you select the correct power supply to meet your configuration, please use the HP Power Advisor at: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor). All HP Common Slot power sources are UL, CE Mark Compliant, Hot Plug and Redundant.

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs.

The HP ProLiant Common Slot Power supplies meet multiple Energy Efficiency Initiatives: Climate Savers Computing Initiative GOLD and ECOS Consulting 80PLUS GOLD for the 460w and 750w Power Supplies and Climate Savers Computing Initiative Silver, ECOS Consulting 80PLUS Silver for 1200w Power Supply. HP has also been working with the EPA on developing an ENERGY STAR? Computer Server specification and plans on offering models that meet the requirements when they are published. Please visit the ENERGY STAR website at [www.energystar.gov](http://www.energystar.gov) for updates on the specification development process and approved platforms.

The HP Power Advisor is located at: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor)

#### System Fans

3 system fans ship standard

**NOTE:** Does not include power supply or processor heat sink fans. Processor heat sink fans packed in processor kit.

N+1 fan redundancy standard

#### Required Cabling

For required cabling information, refer to the HP ProLiant ML350 G6 cabling matrix at: <http://www.hp.com/servers/proliantML350>.

**NOTE:** Please see the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.

#### Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server

Red Hat Enterprise Linux (RHEL)

SUSE Linux Enterprise Server (SLES)

NetWare

**NOTE:** NetWare support on Intel Xeon 5500 family only.

VMware

HP Citrix Essentials for XenServer

**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page [www.hp.com/support/ML350G6](http://www.hp.com/support/ML350G6).



Standard Features

|  |   |
|--|---|
| Graphics                               | <div>Integrated ATI RN50, 64MB video standard</div> <ul style="list-style-type: none"><li>• 16 bit color: maximum resolution of 1600 x 1200</li><li>• 32 bit color: maximum resolution of 1280 x 1024</li></ul> <div><b>NOTE:</b> Maximum resolution available via iLO remote console is 1280 x 1024.</div>   |
| Form Factor                            | <div>Tower or Rack (5U)</div> <div><b>NOTE:</b> Rack models (with a Tower to Rack conversion kit) support:</div> <ul style="list-style-type: none"><li>• Square or round hole racks 24"- 36" deep, including HP Rack System /E and HP Systems</li><li>• Telco racks with 3rd part option kit from Rack Solutions<br/><a href="http://www.racksolutions.com/hp">http://www.racksolutions.com/hp</a></li></ul>  |
| HP Insight Management Control Software | <div>HP Insight Foundation</div> <div>Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.</div> <div>HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems:<br/><a href="http://www.hp.com/go/foundation">http://www.hp.com/go/foundation</a></div> <div>The foundation pack includes:</div> <ul style="list-style-type: none"><li>• HP SmartStart</li><li>• HP Management DVD</li><li>• HP ProLiant Smart Update Firmware DVD</li></ul> <div><b>NOTE:</b> In an effort to support reducing our environmental impact, the HP Insight Foundation Suite for ProLiant media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.</div> <div>HP Integrated Lights-Out (iLO)</div> <div>HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: <a href="http://www.hp.com/go/iLO">www.hp.com/go/iLO</a></div> |

Standard Features

|                           |   |
|---------------------------|---|
| Intelligent Manageability | HP Systems Insight Manager  |
|                           | SmartStart  |
|                           | Redundant ROM   |
|                           | System Firmware Update  |
|                           | ROMPaq  |
|                           | ProLiant RBSU (ROM-Based Setup Utility)   |
|                           | Automatic Server Recovery-2 (ASR-2)   |
|                           | Dynamic Sector Repairing (with Smart Array Controller)  |
|                           | Drive Parameter Tracking (with Smart Array Controller)  |
|                           | Pre-Failure Warranty (covers processors, memory, and SAS hard drives)   |
| Security                  | Power-on password   |
|                           | Setup password  |
|                           | Serial interface control  |
|                           | Disk configuration lock   |
|                           | Power switch security   |
| Warranty                  | <p>This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.</p> <p><b>NOTE:</b> Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:</p> <p><a href="http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html">http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html</a></p> |



Optional Features

|                                |                               |   |
|--------------------------------|-------------------------------|---|
| HP Insight Management Software | HP Insight Control            | <p>HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.</p> <p>Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See <a href="http://www.hp.com/go/insightcontrol">www.hp.com/go/insightcontrol</a></p> <p>HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <a href="http://www.hp.com/services/insight">http://www.hp.com/services/insight</a>.</p>  |
|                                | HP Insight Dynamics           | <p>HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.</p> <p><b>NOTE:</b> For more information, visit: <a href="http://www.hp.com/go/insightdynamics">http://www.hp.com/go/insightdynamics</a></p> |
| High Performance Clusters      | HP Cluster Platforms          | <p>HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and Novell SLES, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <a href="http://www.hp.com/go/clusters">http://www.hp.com/go/clusters</a>.</p>   |
|                                | HPC Interconnects             | <p>High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. <a href="http://www.hp.com/techservers/clusters/ucp/index.html">http://www.hp.com/techservers/clusters/ucp/index.html</a></p>  |
|                                | HP Cluster Management Utility | <p>HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <a href="http://www.hp.com/go/cmu">http://www.hp.com/go/cmu</a></p>  |



Optional Features

HP HPC Linux Value Pack

HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported specially priced software bundle for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler, the HP-MPI parallelization library, the HP Unified Parallel C compiler and the HP Shmem library, as well as the execution environments for the libraries and compiler. [HP HPC Linux Value Pack](#)

Factory Express  
Portfolio for Servers  
and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.

HP Enterprise  
Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. For additional information please visit: <http://www.hp.com/products/configurator>

### Service and Support

#### **Service and Support HP Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI**

When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

#### **Protect your business beyond warranty**

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

#### **HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively**

HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services.

HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement.

Learn more: [www.hp.com/services/servers](http://www.hp.com/services/servers) and [www.hp.com/services/storage](http://www.hp.com/services/storage)

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.

Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>

### Service and Support

## Recommended HP Care Pack Services for optimal satisfaction with your HP product

### Recommended Services

#### **3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour**

Provides your IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 or 24 hours of the initial service request to the HP Global Solution Center.

HP is committed to repairing your hardware within a maximum of six or twenty four hours. The benefits include:

- Improved system uptime
- Predictable repair times
- More effective IT resource planning
- Consistent level of hardware support across your multi-technology systems

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN>

#### **3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7**

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE>

#### **HP ProLiant Server Hardware Installation**

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

- Expedited installation, with all service prerequisites met before the installation is performed
- Installation in accordance with manufacturer's specifications, enhancing the supportability of your HP-installed hardware and software
- Service delivery at a mutually scheduled time
- Allows your IT resources to stay focused on their core tasks and priorities
- Availability of an HP service specialist to answer questions during the onsite delivery of this service

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

### Service and Support

#### Optional HP Care Pack Services that will enhance your HP product experience

##### Optional Services

##### 3-Year HP Support Plus 24

As an alternative to our recommended support level, for customers who need access to responsive 24x7 hardware and software support plus software updates on HP and selected third party products:

For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to HP technical resources, 4-hour response onsite hardware support and software updates.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EEE>

##### 3-Year HP Proactive 24

As an alternative to our recommended support level, for customers who want enhanced operational effectiveness and proactive problem identification:

Provides improved stability, availability and operational effectiveness with an integrated hardware and software support service that combines industry-leading reactive technical assistance with proactive account services, giving your IT manage support from a team of service specialists.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1614ENUC>

##### HP Proactive Select Service

Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN>

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#### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

##### Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

##### Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure

### *Service and Support*

technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

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#### **Customer Technical Training**

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

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#### **HP Services Awards**

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

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#### **Additional Services Information**

To learn more on HP ProLiant servers, HP BladeSystem servers and HP StorageWorks storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: [www.hp.com/services/proliant](http://www.hp.com/services/proliant) or [www.hp.com/services/bladeSystem](http://www.hp.com/services/bladeSystem) or <http://www.hp.com/hps/storage>

Pre-configured Models

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

**NOTE:** Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

**NOTE:** HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

**NOTE:** If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

**NOTE:** Not all models are available in all regions. Check with your local country HP offices for availability.

Entry Tower

|   |                           |  |
|---|---------------------------|--|
| <b>HP ML350T06 E5606 LFF Entry AU Svr</b><br>638180-xx1 | <b>Processor</b>          | (1) Intel® Xeon® Processor E5606 (2.13 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)           |
|   | <b>Cache Memory</b>       | 12MB (1 x 12MB) L3 cache   |
|   | <b>Memory</b>             | (4 GB (1 x 4 GB) RDIMM)  |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/Zero Memory Controller   |
|   | <b>Hard Drive</b>         | None ship standard   |
|   | <b>Internal Storage</b>   | 6.0 TB LFF (3.5-inch) SAS<br>6.0 TB LFF (3.5-inch) SATA  |
|   | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|   | <b>Power Supply</b>       | (1) 460 Watt Hot-Plug (Redundancy enabled) power supply  |
|   | <b>Fans</b>               | 3 fans ship standard   |
|   | <b>Form Factor</b>        | Tower (5U)   |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |

|   |                           |  |
|---|---------------------------|--|
| <b>HP ProLiant ML350 G6 Processor E5504 1P 4GB-R P410i/ZM 460W RPS Tower Server</b><br>487932-xx1 | <b>Processor</b>          | 1 Intel® Xeon® processor E5504 (2.00 GHz, 4MB L3 cache, 80W, DDR3-800)                                     |
|   | <b>Cache Memory</b>       | 4MB (1 x 4MB) L3 cache   |
|   | <b>Memory</b>             | 4GB (2 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/Zero Memory Controller   |
|   | <b>Hard Drive</b>         | None ship standard   |
|   | <b>Internal Storage</b>   | 6.0 TB LFF (3.5-inch) SAS<br>6.0 TB LFF (3.5-inch) SATA  |
|   | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|   | <b>Power Supply</b>       | (1) 460 Watt Hot-Plug (Redundancy enabled) power supply  |
|   | <b>Fans</b>               | 3 fans ship standard   |
|   | <b>Form Factor</b>        | Tower (5U)   |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |



Pre-configured Models

Base Models

|  |                           |  |
|--|---------------------------|--|
| <b>HP ML350T06 E5645 SFF Base AU Svr</b><br>638181-xx1   | <b>Processor</b>          | (1) Intel® Xeon® Processor E5645 (2.40 GHz, 12MB L3 Cache, 80W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)           |
|  | <b>Cache Memory</b>       | 12MB (1 x 12MB) L3 cache   |
|  | <b>Memory</b>             | 6GB (3 x 2GB) PC3-10600 (DDR3-1333) Registered DIMMs   |
|  | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|  | <b>Storage Controller</b> | Embedded HP Smart Array P410i/256MB Controller   |
|  | <b>Hard Drive</b>         | None ship standard   |
|  | <b>Internal Storage</b>   | 2.4 TB SFF(2.5") SAS 2.0 TB SFF(2.5") SATA   |
|  | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|  | <b>Power Supply</b>       | (1) 750 Watt Hot-Plug (Redundancy enabled) power supply  |
|  | <b>Fans</b>               | 3 fans ship standard   |
|  | <b>Form Factor</b>        | Tower (5U)   |
|  | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |
|  |                           |  |
| <b>HP ProLiant ML350 G6 Processor E5520 1P 6GB-R P410i/256 750W RPS Tower Server</b><br>487930-xx1 | <b>Processor</b>          | 1 Intel® Xeon® processor E5520 (2.26 GHz, 8MB L3 cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)                 |
|  | <b>Cache Memory</b>       | 8MB (1 x 8MB) L3 cache   |
|  | <b>Memory</b>             | 6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|  | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|  | <b>Storage Controller</b> | Embedded HP Smart Array P410i/256MB Controller   |
|  | <b>Hard Drive</b>         | None ship standard   |
|  | <b>Internal Storage</b>   | 2.4 TB SFF(2.5-inch) SAS<br>2.0 TB SFF(2.5-inch) SATA  |
|  | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|  | <b>Power Supply</b>       | (1) 750 Watt Hot-Plug (Redundancy enabled) power supply  |
|  | <b>Fans</b>               | 3 fans ship standard   |
|  | <b>Form Factor</b>        | Tower or Rack (5U)   |
|  | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |
|  |                           |  |

Pre-configured Models

|   |                           |  |
|---|---------------------------|--|
| <b>HP ProLiant ML350 G6 Processor</b><br><b>E5520 1P 6GB-R</b><br><b>P410i/256 750W RPS</b><br><b>Rack Server</b><br>487931-xx1 |                           | Intel® Xeon® processor E5520 (2.26 GHz, 8MB L3 cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)                   |
|   | <b>Cache Memory</b>       | 8MB (1 x 8MB) L3 cache   |
|   | <b>Memory</b>             | 6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/256MB Controller   |
|   | <b>Hard Drive</b>         | None ship standard   |
|   | <b>Internal Storage</b>   | 2.4 TB SFF(2.5-inch) SAS<br>2.0 TB SFF(2.5-inch) SATA  |
|   | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|   | <b>Power Supply</b>       | (1) 750 Watt Hot-Plug (Redundancy enabled) power supply  |
|   | <b>Fans</b>               | 3 fans ship standard   |
|   | <b>Form Factor</b>        | Rack (5U)  |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |

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|  |                           |  |
|--|---------------------------|--|
| <b>HP ProLiant ML350 G6 Processor</b><br><b>E5620 1P 6GB-R</b><br><b>P410i/256 460W RPS</b><br><b>Tower Server</b><br>594869-xx1 |                           | (1) Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo (1/1/2/2))            |
|  | <b>Cache Memory</b>       | 12MB (1 x 12MB) L3 cache   |
|  | <b>Memory</b>             | 6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|  | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|  | <b>Storage Controller</b> | Embedded HP Smart Array P410i/256MB Controller   |
|  | <b>Hard Drive</b>         | None ship standard   |
|  | <b>Internal Storage</b>   | (8) SFF SAS/SATA HDD Bays; upgradeable to (16)   |
|  | <b>Optical Drive</b>      | SATA DVD ROM   |
|  | <b>Power Supply</b>       | (1) 460 Watt Hot-Plug (Redundancy enabled) power supply  |
|  | <b>Fans</b>               | 3 fans ship standard   |
|  | <b>Form Factor</b>        | Tower (5U)   |
|  | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |

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Performance Models

|   |                           |  |
|---|---------------------------|--|
| <b>HP ProLiant ML350 G6 Processor(s)</b><br><b>E5530 2P 12GB-R</b><br><b>P410i/512 BBWC 750W</b><br><b>RPS Tower Server</b><br>487928-xx1 |                           | (2) Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)               |
|   | <b>Cache Memory</b>       | 8MB (1 x 8MB) L3 cache   |
|   | <b>Memory</b>             | 12GB (6 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs   |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter   |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/512MB with BBWC  |
|   | <b>Hard Drive</b>         | None ship standard   |
|   | <b>Internal Storage</b>   | 2.4 TB SFF(2.5-inch) SAS<br>2.0 TB SFF(2.5-inch) SATA  |
|   | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive  |
|   | <b>Power Supply</b>       | (2) 750 Watt Hot-Plug Redundant power supplies   |
|   | <b>Fans</b>               | 4 fans ship standard   |
|   | <b>Form Factor</b>        | Tower (5U)   |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |



Pre-configured Models

|   |                           |   |
|---|---------------------------|---|
| <b>HP ProLiant ML350 G6 Processor(s)</b><br><b>E5530 2P 12GB-R</b><br><b>P410i/512 BBWC 750W RPS Rack Server</b><br>576778-xx1  |                           | (2) Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)                          |
|   | <b>Cache Memory</b>       | 8MB (1 x 8MB) L3 cache  |
|   | <b>Memory</b>             | 12GB (6 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/512MB with BBWC   |
|   | <b>Hard Drive</b>         | None ship standard  |
|   | <b>Internal Storage</b>   | 2.4 TB SFF(2.5-inch) SAS<br>2.0 TB SFF(2.5-inch) SATA   |
|   | <b>Optical Drive</b>      | HP Half-Height SATA DVD-ROM Optical Drive   |
|   | <b>Power Supply</b>       | (2) 750 Watt Hot-Plug Redundant power supplies  |
|   | <b>Fans</b>               | 4 full Redundant fans   |
|   | <b>Insight Control</b>    | HP Insight Control Environment No Media single server license, including 1 year of 24x7 Technical Support and Updates |
|   | <b>Form Factor</b>        | Rack (5U)   |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response            |
|   |                           |   |
| <b>HP ProLiant ML350 G6 Processor(s)</b><br><b>X5650 2P 12GB-R</b><br><b>P410i/1GB FBWC 750W RPS Tower Server</b><br>594874-xx1 |                           | (2) Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W,DDR3-1333, HT, Turbo 1/1/2/2/3/3)                      |
|   | <b>Cache Memory</b>       | 12MB (1 x 12MB) L3 cache  |
|   | <b>Memory</b>             | 12GB (6 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs  |
|   | <b>Network Controller</b> | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |
|   | <b>Storage Controller</b> | Embedded HP Smart Array P410i/1G FBWC Controller  |
|   | <b>Hard Drive</b>         | None ship standard  |
|   | <b>Internal Storage</b>   | (8) SFF SAS/SATA HDD Bays; upgradeable to (16)  |
|   | <b>Optical Drive</b>      | SATA DVD ROM  |
|   | <b>Power Supply</b>       | (2) 750 Watt Hot-Plug Redundant power supplies  |
|   | <b>Fans</b>               | 4 full Redundant fans   |
|   | <b>Form Factor</b>        | Tower (5U)  |
|   | <b>Warranty</b>           | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response            |
|   |                           |   |

| Country Code Key |       | Tower Code Key | Rack Code Key |
|------------------|-------|----------------|---------------|
|                  | xx=00 | US             | US            |
|                  | xx=01 | Australia      | N/A           |
|                  | xx=03 | UK             | N/A           |
|                  | xx=04 | Germany        | N/A           |
|                  | xx=05 | France         | N/A           |
|                  | xx=20 | Brazil         | N/A           |
|                  | xx=29 | Japan          | Japan         |
|                  | xx=37 | ADP            | ADP           |
|                  | xx=42 | Europe         | Europe        |
|                  | xx=AA | PRC            | PRC           |

Configuration Information - Factory Integrated Models

**NOTE:** This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

**NOTE:** Configure-to-order (CTO) servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option is only available as a factory installable option.

Step 1: Base Configuration (choose one of the following configurable models)

|           |   |            |
|-----------|---|------------|
| HP Models | <b>ML350G6 Tower Models</b>   |            |
|           | HP ProLiant ML350 G6 SFF Configure-to-order Tower Chassis   | 483447-B21 |
|           | <b>Includes:</b>  |            |
|           | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |            |
|           | Embedded Smart Array P410i Controller   |            |
|           | Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays  |            |
|           | Seven (7) HDD blanks  |            |
|           | Six (6) Expansion slots: One Express x16 Gen2 (x8 speed); One PCI-Express x8  |            |
|           | Gen2 (x8 speed); Four PCI-Express x8 Gen2 (x4 speed)  |            |
|           | Six (6) USB ports   |            |
|           | PS/2 Keyboard & Mouse (2-button)  |            |
|           | Tower Form Factor   |            |
|           | HP ProLiant ML350 G6 LFF Configure-to-order Tower Chassis   | 483448-B21 |
|           | <b>Includes:</b>  |            |
|           | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |            |
|           | Embedded Smart Array P410i Controller   |            |
|           | Six (6) Hot-Plug (LFF) SAS/SATA Drive Bays  |            |
|           | Five (5) HDD blanks   |            |
|           | Six (6) Expansion slots: One Express x16 Gen2 (x8 speed); One PCI-Express x8 Gen2(x8 speed); Four PCI-Express x8 Gen2 (x4 speed)  |            |
|           | Six (6) USB ports   |            |
|           | P/S 2 Keyboard & Mouse (2-button)   |            |
|           | Tower Form Factor   |            |
|           | <b>ML350G6 Rack Models</b>  |            |
|           | HP ProLiant ML350 G6 SFF Configure-to-order Rack Server   | 483443-B21 |
|           | <b>Includes:</b>  |            |
|           | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |            |
|           | Embedded Smart Array P410i Controller   |            |
|           | Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays  |            |
|           | Seven (7) HDD blanks  |            |
|           | Six (6) Expansion slots: One Express x16 Gen2 (x8 speed); One PCI-Express x8 Gen2 (x8 speed); Four PCI-Express x8 Gen2 (x4 speed) |            |
|           | Six (6) USB ports   |            |
|           | Rack (5U) Form Factor   |            |
|           | HP ProLiant ML350 G6 LFF Configure-to-order Rack Server   | 483444-B21 |
|           | <b>Includes:</b>  |            |
|           | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter  |            |
|           | Embedded Smart Array P410i Controller   |            |
|           | Six (6) Hot-Plug (LFF) SAS/SATA Drive Bays  |            |
|           | Six (6) Expansion slots: One Express x16 Gen2 (x8 speed); One PCI-Express x8 Gen2 (x8 speed); Four PCI-Express x8 Gen2 (x4 speed) |            |
|           | Six (6) USB ports   |            |
|           | Rack (5U) Form Factor   |            |

Configuration Information - Factory Integrated Models

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

|               |  |            |
|---------------|--|------------|
| HP Processors | <b>Six-Core Processors</b>   |            |
|               | HP ML350 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) FIO Processor Kit | 638315-L21 |
|               | HP ML350 G6 Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W) FIO Processor Kit | 601236-L21 |
|               | HP ML350 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) FIO Processor Kit | 601238-L21 |
|               | HP ML350 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) FIO Processor Kit | 601240-L21 |
|               | HP ML350 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) FIO Processor Kit | 638316-L21 |
|               | HP ML350 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) FIO Processor Kit | 638317-L21 |
|               | <b>Quad-Core Processors</b>  |            |
|               | HP ML350 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) FIO Processor Kit | 638314-L21 |
|               | HP ML350 G6 Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W) FIO Processor Kit | 601242-L21 |
|               | HP ML350 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) FIO Processor Kit | 601244-L21 |
|               | HP ML350 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) FIO Processor Kit | 601246-L21 |
|               | HP ML350 G6 Intel® Xeon® E5607 (2.26GHz/4-core/4MB/80W) FIO Processor Kit  | 638318-L21 |
|               | HP ML350 G6 Intel® Xeon® E5606 (2.13GHz/4-core/4MB/80W) FIO Processor Kit  | 638319-L21 |
|               | HP ML350 G6 Intel® Xeon® E5603 (2.00GHz/2-core/4MB/80W) FIO Processor Kit  | 638320-L21 |
|               | HP ML350 G6 Intel® Xeon® X5570 (2.93GHz/4-core/8MB/95W) FIO Processor Kit  | 495904-L21 |
|               | HP ML350 G6 Intel® Xeon® X5560 (2.80GHz/4-core/8MB/95W) FIO Processor Kit  | 495906-L21 |
|               | HP ML350 G6 Intel® Xeon® X5550 (2.66GHz/4-core/8MB/95W) FIO Processor Kit  | 495908-L21 |
|               | HP ML350 G6 Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W) FIO Processor Kit  | 495910-L21 |
|               | HP ML350 G6 Intel® Xeon® E5530 (2.40GHz/4-core/8MB/80W) FIO Processor Kit  | 495912-L21 |
|               | HP ML350 G6 Intel® Xeon® E5520 (2.26GHz/4-core/8MB/80W) FIO Processor Kit  | 495914-L21 |
|               | HP ML350 G6 Intel® Xeon® E5507 (2.26 GHz/4-core/4MB/80W) FIO Processor Kit | 601248-L21 |
|               | HP ML350 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) FIO Processor Kit  | 495916-L21 |
|               | HP ML350 G6 Intel® Xeon® E5504 (2.00GHz/4-core/4MB/80W) FIO Processor Kit  | 495918-L21 |
|               | HP ML350 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) FIO Processor Kit | 601252-L21 |

Configuration Information - Factory Integrated Models

|  |  |            |
|--|--|------------|
| HP Memory  | HP ML350 G6 Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W) FIO Processor Kit  | 505513-L21 |
|  | HP ML350 G6 Intel® Xeon® L5506 (2.13GHz/4-core/4MB/60W) FIO Processor Kit  | 495902-L21 |
|  | <b>Dual-Core Processors</b>  |            |
|  | HP ML350 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) FIO Processor Kit   | 601250-L21 |
|  | HP ML350 G6 Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W) FIO Processor Kit  | 495920-L21 |
|  | <b>Registered DIMMs (RDIMMs)</b>   |            |
|  | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500656-B21 |
|  | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 593339-B21 |
|  | HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500658-B21 |
|  | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500662-B21 |
|  | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit   | 500666-B21 |
|  | HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit   | 500660-B21 |
|  | HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit   | 604504-B21 |
|  | HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit   | 604506-B21 |
|  | HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit  | 627812-B21 |
| <b>NOTE:</b> Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors |  |            |
| HP Power Supplies  | <b>Unbuffered with ECC DIMMs (UDIMMs)</b>  |            |
|  | HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500668-B21 |
|  | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500670-B21 |
|  | HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500672-B21 |
|  | HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit   | 619488-B21 |
|  | <b>NOTE:</b> All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a> .                     |            |
|  | <b>NOTE:</b> Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <a href="http://h18004.www1.hp.com/products/servers/platforms/energyefficient/">http://h18004.www1.hp.com/products/servers/platforms/energyefficient/</a>                      |            |
|  | <b>NOTE:</b> Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a> |            |
|  | HP 460W HE Hot Plug AC Power Supply Kit  | 503296-B21 |
|  | HP 750W Common Slot High Efficiency Power Supply Kit   | 512327-B21 |
|  | HP 1200W 12V Hot Plug AC Power Supply  | 500172-B21 |





Configuration Information - Factory Integrated Models

**NOTE:** Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Step 3: Choose Additional Factory Integratable Options

|                        |   |            |
|------------------------|---|------------|
| HP Storage Controllers | HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller  | 491191-B21 |
|                        | <b>NOTE:</b> SAS Controller supporting RAID 0/1/1+0/5.  |            |
|                        | HP Smart Array P411/256 2-ports Ext PCIe x8 FIO SAS Controller  | 491193-B21 |
|                        | <b>NOTE:</b> SAS Controller supporting RAID 0/1/1+0/5.  |            |
| Upgrade Options        |   |            |
|                        | HP 256MB Factory Integrated P-Series Cache Module   | 534108-B21 |
|                        | <b>NOTE:</b> Available for P410i only.  |            |
| HP Performance Packs   | Performance Packs are necessary to configure a HP ProLiant ML350 G6 to a High Performance Model which includes the latest performance technologies and enterprise class availability features pre-installed for convenience and value. The Performance Pack includes a 2nd processor, 512MB cache with BBWC for P410i (650 mAh P-Series Battery), redundant fan, and (1) 750W CS HE Power supply kit. |            |
|                        | <b>NOTE:</b> Must also select 447326-B21 (SATA DVD ROM) to achieve parity to ML350 G6 High Performance Models.  |            |
|                        | HP ML350G6 E5530 HPM FIO Kit  | 530547-B21 |
| HP Insight Software    | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License  | 582765-B21 |
|                        | HP Insight Control for Linux including 1yr 24x7 Support ML/DL Bundle 1 Server FIO License   | TC203A     |

Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional options, please refer to the "Core Options" and "Additional Options" section below.



Core Options

**NOTE:** Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

|                   |  |            |
|-------------------|--|------------|
| HP Unique Options | HP ML350 G6 Redundant Fan/Baffle Kit   | 515081-B21 |
|                   | HP ML350 G6 2 Slot PCI-X Riser Kit   | 488413-B21 |
|                   | <b>NOTE:</b> The HP PCI-X Expander kit converts a single PCI Express slot (Slot 1) into two full height, full length 64-bit 100MHz PCI-X slots. The PCI-X Expander Kit can only be plug in Slot 1. |            |
|                   | HP ML350G6 Tower to Rack Conversion Kit  | 534534-B21 |
|                   | <b>NOTE:</b> See "Redundant Options" section below for Hot Plug Redundant Power supplies.  |            |
|                   | HP 2.5 Hard Disk Drive Blank Kit   | 503771-B21 |

|               |  |            |
|---------------|--|------------|
| HP Processors | <b>Six-Core Processors</b>   |            |
|               | HP ML350 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) Processor Kit | 638315-B21 |
|               | HP ML350 G6 Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W) Processor Kit | 601236-B21 |
|               | HP ML350 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) Processor Kit | 601238-B21 |
|               | HP ML350 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) Processor Kit | 601240-B21 |
|               | HP ML350 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor Kit | 638316-B21 |
|               | HP ML350 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor Kit | 638317-B21 |
|               | <b>Quad-Core Processors</b>  |            |
|               | HP ML350 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) Processor Kit | 638314-B21 |
|               | HP ML350 G6 Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W) Processor Kit | 601242-B21 |
|               | HP ML350 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) Processor Kit | 601244-B21 |
|               | HP ML350 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) Processor Kit | 601246-B21 |
|               | HP ML350 G6 Intel® Xeon® E5607 (2.26GHz/4-core/4MB/80W) Processor Kit  | 638318-B21 |
|               | HP ML350 G6 Intel® Xeon® E5606 (2.13GHz/4-core/4MB/80W) Processor Kit  | 638319-B21 |
|               | HP ML350 G6 Intel® Xeon® E5603 (2.00GHz/2-core/4MB/80W) Processor Kit  | 638320-B21 |
|               | HP ML350 G6 Intel® Xeon® X5570 (2.93GHz/4-core/8MB/95W) Processor Kit  | 495904-B21 |
|               | HP ML350 G6 Intel® Xeon® X5560 (2.80GHz/4-core/8MB/95W) Processor Kit  | 495906-B21 |
|               | HP ML350 G6 Intel® Xeon® X5550 (2.66GHz/4-core/8MB/95W) Processor Kit  | 495908-B21 |
|               | HP ML350 G6 Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W) Processor Kit  | 495910-B21 |
|               | HP ML350 G6 Intel® Xeon® E5530 (2.40GHz/4-core/8MB/80W) Processor Kit  | 495912-B21 |
|               | HP ML350 G6 Intel® Xeon® E5520 (2.26GHz/4-core/8MB/80W) Processor Kit  | 495914-B21 |
|               | HP ML350 G6 Intel® Xeon® E5507 (2.26 GHz/4-core/4MB/80W) Processor Kit | 601248-B21 |
|               | HP ML350 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) Processor Kit  | 495916-B21 |
|               | HP ML350 G6 Intel® Xeon® E5504 (2.00GHz/4-core/4MB/80W) Processor Kit  | 495918-B21 |
|               | HP ML350 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) Processor Kit | 601252-B21 |



Core Options

|   |            |
|---|------------|
| HP ML350 G6 Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W) Processor Kit | 505513-B21 |
| HP ML350 G6 Intel® Xeon® L5506 (2.13GHz/4-core/4MB/60W) Processor Kit | 495902-B21 |
| <b>Dual-Core Processors</b>   |            |
| HP ML350 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) Processor Kit  | 601250-B21 |
| HP ML350 G6 Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W) Processor Kit | 495920-B21 |

HP Memory

|   |            |
|---|------------|
| <b>Registered RDIMMs</b>  |            |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit   | 500656-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit   | 593339-B21 |
| HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit   | 500658-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit   | 500662-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit  | 500666-B21 |
| HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit  | 500660-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit  | 604504-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit  | 604506-B21 |
| <b>NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors</b>  |            |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit   | 627812-B21 |
| <b>Unregistered with ECC UDIMMs</b>   |            |
| HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit   | 500668-B21 |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit   | 500670-B21 |
| HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit   | 500672-B21 |
| HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit  | 619488-B21 |
| <b>NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a>.</b> |            |
| <b>NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <a href="http://www.hp.com/go/proliant-energy-efficient">www.hp.com/go/proliant-energy-efficient</a>.</b>   |            |

### Core Options

|                       |  |            |
|-----------------------|--|------------|
| HP Drive Cage Options | HP ML350/370 G6 8 Small Form Factor (SFF) 2nd Drive Cage Kit   | 507803-B21 |
|                       | <b>NOTE:</b> The Second drive cage installation replaces 2 internal optical bays. It is required to purchase a SAS RAID controller or SAS Expander Card to support over 8 HDD  |            |
|                       | <b>NOTE:</b> To cover a empty SFF HDD slot, please order the following SFF hard drive blank spare kit: 392613-001  |            |
|                       | HP ML350/ML/DL370G6 2 Large Form Factor Drive Kit  | 487936-B21 |
| HP Optical Drives     | <b>NOTE:</b> The Second drive cage installation replaces 2 internal optical bays.  |            |
|                       | <b>NOTE:</b> To cover a empty LFF HDD slot, please order the following LFF hard drive blank spare kit: 389015-001  |            |
|                       | HP Half-Height SATA DVD-ROM Optical Drive  | 447326-B21 |
|                       | HP Half-Height SATA DVD-RW Optical Drive   | 447328-B21 |
| HP Hard Drives        | <b>NOTE:</b> Please note that some of the earlier BTO models may not support adding SATA Optical Drives. To ensure compatibility of the SATA Optical Drives, please add additional optical drives only on models with Quad-Core 5400 Series.                               |            |
|                       | <b>SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives</b>   |            |
|                       | HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 581286-B21 |
|                       | HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 581284-B21 |
|                       | HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 507127-B21 |
|                       | HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 512547-B21 |
|                       | HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 507125-B21 |
|                       | HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive   | 512545-B21 |
|                       | <b>SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives</b>   |            |
|                       | HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 516828-B21 |
|                       | HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 516816-B21 |
|                       | HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive  | 516814-B21 |
|                       | <b>SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>  |            |
|                       | HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive  | 507616-B21 |
|                       | HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive  | 507614-B21 |
|                       | <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html">http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html</a> (Worldwide) |            |
|                       | <b>SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives</b>  |            |
|                       | HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive  | 507610-B21 |
|                       | <b>SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives</b>   |            |



Core Options

|   |            |
|---|------------|
| HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive  | 507750-B21 |
| HP 160GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive  | 530888-B21 |
| <b>SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>  |            |
| HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive  | 507632-B21 |
| HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive  | 454146-B21 |
| HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive  | 458928-B21 |
| <b>SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives</b>  |            |
| HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive  | 571230-B21 |
| HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive  | 458945-B21 |
| <b>NOTE:</b> SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html">http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html</a> (Worldwide) |            |
| <b>SATA Hot Plug 3.5" Midline (MDL) Solid State Drives</b>  |            |
| HP 120GB 3G SATA LFF (3.5-inch) Midline 1yr Warranty Solid State Drive  | 570763-B21 |
| HP 60GB 3G SATA LFF (3.5-inch) Midline 1yr Warranty Solid State Drive   | 570761-B21 |
| <b>SATA Hot Plug Midline (MDL) Solid State Drives</b>   |            |
| HP 120GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive  | 572073-B21 |
| HP 60GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive   | 572071-B21 |
| <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html">http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html</a> (Worldwide)  |            |
| <b>NOTE:</b> The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.  |            |
| <b>NOTE:</b> Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.  |            |

HP Networking

|  |            |
|--|------------|
| <b>Gigabit Ethernet adapters</b>   |            |
| HP NC112T PCI Express Gigabit Server Adapter   | 503746-B21 |
| HP NC360T PCI-E Dual Port Gigabit Server Adapter   | 412648-B21 |
| HP NC364T PCI-E Quad Port Gigabit Server Adapter   | 435508-B21 |
| <b>NOTE:</b> Does not support Windows 2000.  |            |
| <b>NOTE:</b> There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server.                                   |            |
| HP NC365T 4-port Ethernet Server Adapter   | 593722-B21 |
| HP NC373F PCI-E Multifunction 1000SX Gigabit Svr Adapter   | 394793-B21 |
| HP NC373T PCI-E Multifunction Gigabit Server Adapter   | 394791-B21 |
| HP NC375T PCI Express Quad Port Gigabit Server Adapter   | 538696-B21 |
| HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter   | 458492-B21 |
| <b>10 Gigabit Ethernet adapters</b>  |            |
| <b>NOTE:</b> A minimum of two gigabytes (2 GB) of server memory is required per each adapter.  |            |
| <b>NOTE:</b> Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. |            |
| HP NC522SFP Dual Port 10GbE Server Adapter   | 468332-B21 |
| HP NC523SFP 10Gb 2-port Server Adapter   | 593717-B21 |



Core Options

|  |            |
|--|------------|
| HP NC550SFP Dual Port 10GbE Server Adapter   | 581201-B21 |
| <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://www.hp.com/go/ProLiantNICs">www.hp.com/go/ProLiantNICs</a> |            |

|                          |                                    |            |
|--------------------------|------------------------------------|------------|
| HP I/O Expansion Options | HP ML350 G6 2 Slot PCI-X Riser Kit | 488413-B21 |
|--------------------------|------------------------------------|------------|

|  |  |            |
|--|--|------------|
| HP Power Supplies  | <b>NOTE:</b> Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a> . |            |
|  | <b>Power Supplies</b>  |            |
|  | HP 460W HE Hot Plug AC Power Supply Kit  | 503296-B21 |
|  | HP 750W Common Slot High Efficiency Power Supply Kit   | 512327-B21 |
|  | HP 1200W 12V Hot Plug AC Power Supply  | 500172-B21 |
| <b>NOTE:</b> Option Kits contain optional power supply, an IEC power cable and PDU IEC cables. |  |            |

|                    |                                      |            |
|--------------------|--------------------------------------|------------|
| HP Cooling Options | HP ML350 G6 Redundant Fan/Baffle Kit | 515081-B21 |
|--------------------|--------------------------------------|------------|

Additional Options

|                     |   |            |
|---------------------|---|------------|
| HP Insight Software | <b>HP Insight Control for Linux</b>   |            |
|                     | HP Insight Control for Linux including 1yr 24x7 Support Electronic License  | TC213AAE   |
|                     | HP Insight Control for Linux including 1yr 24x7 Support Single Server License   | TC209A     |
|                     | HP Insight Control for Linux Media Kit  | TC208A     |
|                     | <b>NOTE:</b> Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.<br><b>NOTE:</b> Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/ic-linux">http://www.hp.com/go/ic-linux</a> (click on Download button).<br><b>NOTE:</b> Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.<br><b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys.<br><b>NOTE:</b> For additional License Kits, including electronic licensing options, please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html">http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html</a> |            |
|                     | <b>HP Insight Control</b>   |            |
|                     | HP Insight Software Media Kit   | 436222-B21 |
|                     | <b>NOTE:</b> Insight Software DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Environment suite. Uses an integrated installer to perform quick and accurate software installation and updates.   |            |
|                     | HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License   | 452148-B22 |
|                     | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License   | TC278AAE   |
|                     | <b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.<br><b>NOTE:</b> Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.<br><b>NOTE:</b> Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.<br><b>NOTE:</b> Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/insightupdates">http://www.hp.com/go/insightupdates</a> .<br><b>NOTE:</b> For additional License Kits, please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html">http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html</a>  |            |
|                     | <b>HP Integrated Lights-Out (iLO) Advanced</b>  |            |
|                     | HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License  | 512485-B21 |
|                     | <b>NOTE:</b> This license allows 1 server to be deployed and managed via HP iLO Advanced. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service<br><b>NOTE:</b> Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.<br><b>NOTE:</b> For additional license kits, including electronic delivery options, please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html">http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html</a>  |            |





Additional Options

|                            |  |            |
|----------------------------|--|------------|
| HP I/O Accelerator Options | HP 160GB SLC PCIe ioDrive  | 600278-B21 |
|                            | <b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.   |            |
|                            | HP 320GB MLC PCIe ioDrive  | 600279-B21 |
|                            | <b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.   |            |
|                            | HP 320GB SLC PCIe ioDrive Duo  | 600281-B21 |
|                            | HP 640GB MLC PCIe ioDrive Duo  | 600282-B21 |
| HP Graphics Options        | HP 1.28TB MLC PCIe ioDrive Duo   | 641027-B21 |
|                            | <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html">http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html</a> (Worldwide)   |            |
|                            |  |            |
|                            |  |            |
|                            |  |            |
|                            |  |            |
| HP Security - TPM          | HP 350/370G6 Graphic Card Cable Kit  | 537721-B21 |
|                            |  |            |
|                            |  |            |
|                            |  |            |
|                            |  |            |
|                            |  |            |
| HP Storage Controllers     | HP Trusted Platform Module Option  | 488069-B21 |
|                            | <b>NOTE:</b> The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: <a href="http://www.hp.com/go/TPM">www.hp.com/go/TPM</a> . |            |
|                            | <b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.   |            |
|                            | <b>NOTE:</b> The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.  |            |
|                            |  |            |
|                            |  |            |
| HP Storage Controllers     | <b>SAS Controllers</b>   |            |
|                            | <b>HP Smart Array P212 Controller</b>  |            |
|                            | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller  | 462828-B21 |
|                            | HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller   | 462834-B21 |
|                            | <b>HP Smart Array P410 Controller</b>  |            |
|                            | HP Smart Array P410/256 2-ports Int PCIe x8 SAS Controller   | 462862-B21 |
|                            | HP Smart Array P410/512 BBWC 2-ports Int PCIe x8 SAS Controller  | 462864-B21 |
|                            | HP Smart Array P410/512 FBWC 2-ports Int PCIe x8 SAS Controller  | 578230-B21 |
|                            | HP Smart Array P410/1G FBWC 2-ports Int PCIe x8 SAS Controller   | 572532-B21 |
|                            | <b>NOTE:</b> HP NHP Internal SAS/SATA 4 Port Cable Kit (487734-B21) is required when adding Smart Array P410 Controller on Non-Hot Plug SATA/SAS server models.  |            |
|                            | <b>HP Smart Array P411 Controller</b>  |            |
|                            | HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller   | 462830-B21 |
|                            | HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller  | 462832-B21 |
|                            | HP Smart Array P411/512 FBWC 2-ports Ext PCIe x8 SAS Controller  | 578229-B21 |
|                            | HP Smart Array P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller   | 572531-B21 |
|                            | <b>Smart Array P812 Controller</b>   |            |





Additional Options

|  |            |
|--|------------|
| HP Smart Array P812/1G FBWC 2-ports Int/4-ports Ext PCIe x8 SAS Controller   | 487204-B21 |
| <b>Optional Upgrades</b>   |            |
| HP 256MB P-series Cache Upgrade  | 462968-B21 |
| <b>NOTE:</b> Supported on HP Smart Array P212 & HP Smart Array P410/ZM Controller only.  |            |
| HP 512MB P-Series Battery Backed Write Cache Upgrade   | 462967-B21 |
| <b>NOTE:</b> Supported on HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.   |            |
| HP 650 mAh P-Series Battery  | 462969-B21 |
| <b>NOTE:</b> Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.   |            |
| HP 15 Position 24in SFP Battery Cable Assembly   | 496029-B21 |
| <b>NOTE:</b> Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.   |            |
| HP 512MB Flash Backed Write Cache  | 534916-B21 |
| <b>NOTE:</b> Supported on the Smart Array P410i Controller only.   |            |
| HP 1GB Flash Backed Cache  | 534562-B21 |
| <b>NOTE:</b> Supported on the Smart Array P410i Controller only.   |            |
| HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License  | 516471-B21 |
| <b>NOTE:</b> This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.  |            |
| HP 24 Bay 3Gb SAS Expander Card  | 468406-B21 |
| <b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html">http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html</a> (Smart Array P212 Controller)<br><a href="http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html">http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html</a> (Smart Array P410 Controller)<br><a href="http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html">http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html</a> (Smart Array P411 Controller)<br><a href="http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html">http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html</a> (Smart Array P812 Controller)<br><a href="http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html">http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html</a> (Smart Array Advanced Pack) |            |
| <b>SAS HBA</b>   |            |
| HP SC08Ge 2-ports Ext PCIe x8 SAS Host Bus Adapter   | 488765-B21 |
| HP Modular Smart Array SC08e 2-ports Ext PCIe x8 SAS Host Bus Adapter  | 614988-B21 |
| <b>NOTE:</b> Please see the QuickSpecs for additional information:<br><a href="http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html">http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html</a>  |            |
| <b>SCSI HBA</b>  |            |
| HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter   | 412911-B21 |
| <b>NOTE:</b> Supports external drive attach.   |            |
| HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter   | AH627A     |
| <b>NOTE:</b> Please see the following QuickSpecs for additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html">http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html</a>  |            |

Additional Options

|                |   |  |        |
|----------------|---|--|--------|
| HP Tape Backup | <b>NOTE:</b> For the complete range of StorageWorks tape drives, autoloaders, libraries and media see: <a href="http://www.hp.com/go/tape">http://www.hp.com/go/tape</a> . For hardware and software compatibility of HP StorageWorks tape backup products see: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> .   |  |        |
|                | HP StorageWorks DAT 160 SAS Internal Tape Drive   |  | Q1587A |
|                | HP StorageWorks DAT 160 USB Internal Tape Drive   |  | Q1580A |
|                | HP StorageWorks DAT 320 USB Internal Tape Drive   |  | AJ825A |
|                | HP StorageWorks DAT 320 SAS Internal Tape Drive   |  | AJ830A |
|                | <b>NOTE:</b> Connection using HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.  |  |        |
|                | HP StorageWorks Ultrium 448 SAS Internal Drive  |  | DW085A |
|                | HP StorageWorks LTO-4 Ultrium 1760 SAS Internal WW Tape Drive   |  | EH919A |
|                | <b>NOTE:</b> Connection using HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.  |  |        |
|                | HP StorageWorks LTO-4 Ultrium 1840 SAS External WW Drive  |  | EH861A |
|                | <b>NOTE:</b> Connection using HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.  |  |        |
|                | HP StorageWorks LTO-5 Ultrium 3000 SAS Internal Tape Drive  |  | EH957A |
|                | HP StorageWorks LTO-5 Ultrium 3000 SAS External Tape Drive  |  | EH958A |
|                | <b>NOTE:</b> Connection using HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.  |  |        |
|                | HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader   |  | AK377A |
|                | <b>NOTE:</b> Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. Connection using HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.  |  |        |
|                | HP StorageWorks MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library   |  | BL537A |
|                | HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Tape Library   |  | AK380A |
|                | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Tape Library   |  | AK378A |
| HP Disk Backup | <b>NOTE:</b> For the complete range of StorageWorks D2D Backup Systems see: <a href="http://www.hp.com/go/d2d">http://www.hp.com/go/d2d</a> . For the complete range of StorageWorks RDX drives and media see: <a href="http://www.hp.com/go/rdx">http://www.hp.com/go/rdx</a> . For hardware and software compatibility of HP StorageWorks disk backup products see: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> . |  |        |
|                | <b>HP StorageWorks RDX Removable Disk Backup Systems USB</b>  |  |        |
|                | HP StorageWorks RDX320 Internal Removable Disk Backup System  |  | AJ767A |
|                | <b>NOTE:</b> For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 320GB of disk capacity per data cartridge.   |  |        |
|                | HP StorageWorks RDX500 Internal Removable Disk Backup System  |  | AJ934A |
|                | <b>NOTE:</b> For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 500GB of disk capacity per data cartridge.   |  |        |
|                | HP StorageWorks RDX160 Internal Removable Disk Backup System  |  | AJ765A |
|                | HP StorageWorks RDX 1TB Internal Removable Disk Backup System   |  | BV847A |

Additional Options

HP StorageWorks Options

**NOTE:** The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: <http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

**StorageWorks Fibre Channel HBA**

**Brocade Fibre Channel HBAs**

|   |        |
|---|--------|
| HP StorageWorks 81B PCIe 8Gb Fibre Channel Single Port Host Bus Adapter | AP769A |
| HP StorageWorks 82B PCIe 8Gb Fibre Channel Dual Port Host Bus Adapter   | AP770A |
| HP StorageWorks 41B PCIe 4Gb Fibre Channel Single Port Host Bus Adapter | AP767A |
| HP StorageWorks 42B PCIe 4Gb Fibre Channel Dual Port Host Bus Adapter   | AP768A |

**Emulex Fibre Channel HBAs**

|  |        |
|--|--------|
| HP StorageWorks 81E 8Gb Single Port PCI-e Fibre Channel Host Bus Adapter | AJ762A |
| HP StorageWorks 82E 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter   | AJ763A |
| HP StorageWorks FC2142SR 4Gb PCIe Host Bus Adapter                       | A8002A |
| HP StorageWorks FC2242SR 4Gb PCIe DC Host Bus Adapter                    | A8003A |

**QLogic Fibre Channel HBAs**

|  |        |
|--|--------|
| HP StorageWorks 81Q PCI-e Fibre Channel Host Bus Adapter               | AK344A |
| HP StorageWorks 82Q 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter | AJ764A |
| HP StorageWorks FC1142SR 4Gb PCIe Host Bus Adapter                     | AE311A |
| HP StorageWorks FC1242SR 4Gb PCIe DC Host Bus Adapter                  | AE312A |

**StorageWorks Converged Network Adapter**

|   |        |
|---|--------|
| HP StorageWorks CN1000E Dual Port Converged Network Adapter | AW520A |
| HP StorageWorks CN1000Q Dual Port Converged Network Adapter | BS668A |

HP Disk Storage Systems

**MSA SAN Storage Arrays**

|                             |            |
|-----------------------------|------------|
| HP StorageWorks MSA60 Array | 418408-B21 |
|-----------------------------|------------|

**NOTE:** Please see the QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: [http://h18000.www1.hp.com/products/quickspecs/12627\\_div/12627\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html) (Worldwide)

|                             |            |
|-----------------------------|------------|
| HP StorageWorks MSA70 Array | 418800-B21 |
|-----------------------------|------------|

**NOTE:** Please see the QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: [http://h18000.www1.hp.com/products/quickspecs/12652\\_div/12652\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html) (Worldwide)

|  |        |
|--|--------|
| HP StorageWorks 2012sa Dual Controller Modular Smart Array   | AJ753A |
| HP StorageWorks 2012sa Single Controller Modular Smart Array | AJ752A |

**NOTE:** Please see the QuickSpecs for additional options and configuration information at: [http://h18000.www1.hp.com/products/quickspecs/13045\\_div/13045\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13045_div/13045_div.html) (Worldwide)

**Disk Enclosures**

|                                      |        |
|--------------------------------------|--------|
| HP StorageWorks D2600 Disk Enclosure | AJ940A |
| HP StorageWorks D2700 Disk Enclosure | AJ941A |

**NOTE:** Please see the QuickSpecs for additional options and configuration information at: [http://h18000.www1.hp.com/products/quickspecs/13404\\_div/13404\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html) (Worldwide)



Additional Options

|                                  |  |        |
|----------------------------------|--|--------|
| HP Uninterruptible Power Systems | <b>HP Tower UPS</b>  |        |
|                                  | <b>HP T1500 G3 UPS Models</b>  |        |
|                                  | HP T1500 G3 1400VA INTL Tower Uninterruptible Power System   | AF451A |
|                                  | HP T1500 G3 1400VA NA Tower Uninterruptible Power System   | AF450A |
|                                  | HP T1500J JP Uninterruptible Power System  | AF458A |
|                                  | <b>NOTE:</b> Please see the QuickSpecs for additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html">http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html</a><br>(Worldwide)   |        |
|                                  | <b>HP T1000 G3 UPS Models</b>  |        |
|                                  | HP T1000 G3 1000VA INTL Tower Uninterruptible Power System   | AF449A |
|                                  | HP T1000 G3 1000VA NA Tower Uninterruptible Power System   | AF448A |
|                                  | HP T1000J JP Uninterruptible Power System  | AF457A |
|                                  | <b>HP Rack-mountable UPS</b>   |        |
|                                  | <b>HP R1500 G2 UPS</b>   |        |
|                                  | HP R1500 G2 1440VA Low Voltage NA 1U Rackmount Uninterruptible Power System  | AF419A |
|                                  | HP R1500 G2 1440VA INTL 1U Rackmount Uninterruptible Power System  | AF418A |
|                                  | HP R1500 G2 1200kVA Low Voltage JP 1U Rackmount Uninterruptible Power System   | AF421A |
|                                  | <b>NOTE:</b> Please see the QuickSpecs for additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html">http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html</a><br>(Worldwide)   |        |
|                                  | <b>HP R/T3000 Uninterruptible Power System (UPS)</b>   |        |
|                                  | HP R/T3000 3300VA INTL 2U Rackmount Uninterruptible Power System   | AF454A |
|                                  | HP R/T3000 2880VA Low Voltage NA/JPN 2U Rackmount Uninterruptible Power System   | AF452A |
|                                  | HP R/T3000 3300VA High Voltage NA/JPN 2U Rackmount Uninterruptible Power System  | AF453A |
|                                  | <b>NOTE:</b> For additional information on HP Uninterruptable Power Systems please go to: <a href="http://www.hp.com/servers/rackups">www.hp.com/servers/rackups</a> .   |        |
|                                  | <b>NOTE:</b> Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link:<br><a href="http://www.hp.com/products/powercords">www.hp.com/products/powercords</a> . |        |

|                |                                    |        |
|----------------|------------------------------------|--------|
| HP Rack Series | <b>Rack 10000 G2 series</b>        |        |
|                | HP 10642 G2 Pallet Universal Rack  | AF001A |
|                | HP 10642 G2 Shock Universal Rack   | AF002A |
|                | HP 10642 G2 1200mm deep Shock Rack | AF092A |
|                | HP 10647 G2 1200mm deep Shock Rack | AF094A |

|                 |   |        |
|-----------------|---|--------|
| HP Rack Options | <b>Keyboards and Monitors</b>                             |        |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor   | AZ881A |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor   | AZ876A |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor   | AZ873A |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor   | AZ872A |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor | AZ884A |
|                 | HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor   | AZ874A |



### Additional Options

|   |        |
|---|--------|
| HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor     | AZ882A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor     | AZ877A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor     | AZ880A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor     | AZ883A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor  | AZ878A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor     | AZ875A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor     | AZ879A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor     | AZ871A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor     | AZ870A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor | AZ885A |

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/13731\\_div/13731\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13731_div/13731_div.html)  
(Worldwide)

|   |        |
|---|--------|
| HP 1U IT Rackmount Keyboard with USB    | AG076A |
| HP 1U US Rackmount Keyboard with USB    | AG072A |
| HP 1U BE Rackmount Keyboard with USB    | AG083A |
| HP 1U DK Rackmount Keyboard with USB    | AG078A |
| HP 1U FR Rackmount Keyboard with USB    | AG075A |
| HP 1U DE Rackmount Keyboard with USB    | AG074A |
| HP 1U INT Rackmount Keyboard with USB   | AG086A |
| HP 1U NO Rackmount Keyboard with USB    | AG079A |
| HP 1U PT Rackmount Keyboard with USB    | AG082A |
| HP 1U RU Rackmount Keyboard with USB    | AG085A |
| HP 1U ES Rackmount Keyboard with USB    | AG077A |
| HP 1U SE/FI Rackmount Keyboard with USB | AG080A |
| HP 1U Rackmount Keyboard with USB       | AG081A |
| HP 1U UK Rackmount Keyboard with USB    | AG073A |
| HP 1U JP Rackmount Keyboard with USB    | AG084A |

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12465\\_div/12465\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12465_div/12465_div.html)  
(Worldwide)

|   |        |
|---|--------|
| HP TAA TFT7600 Rackmount Keyboard 17in US Monitor | AG067A |
| HP TFT7600 Rackmount Keyboard 17in BE Monitor     | AG063A |
| HP TFT7600 Rackmount Keyboard 17in DK Monitor     | AG058A |
| HP TFT7600 Rackmount Keyboard 17in IT Monitor     | AG056A |
| HP TFT7600 Rackmount Keyboard 17in CH Monitor     | AG061A |
| HP TFT7600 Rackmount Keyboard 17in FR Monitor     | AG055A |
| HP TFT7600 Rackmount Keyboard 17in DE Monitor     | AG054A |
| HP TFT7600 Rackmount Keyboard 17in JP Monitor     | AG064A |
| HP TFT7600 Rackmount Keyboard 17in NO Monitor     | AG059A |
| HP TFT7600 Rackmount Keyboard 17in RU Monitor     | AG065A |
| HP TFT7600 Rackmount Keyboard 17in ES Monitor     | AG057A |
| HP TFT7600 Rackmount Keyboard 17in UK Monitor     | AG053A |
| HP TFT7600 Rackmount Keyboard 17in SE/FI Monitor  | AG060A |
| HP TFT7600 Rackmount Keyboard 17in Intl Monitor   | AG066A |
| HP TFT7600 Rackmount Keyboard 17in PT Monitor     | AG062A |



Additional Options

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/12417\\_div/12417\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12417_div/12417_div.html)  
(Worldwide)

**NOTE:** For additional information regarding Rack Options, please see the following URL: <http://www.hp.com/go/rackandpower>.

**HP Server Console Switches**

|   |        |
|---|--------|
| HP Server Console 0x2x8 Port Analog Switch  | AF616A |
| HP Server Console 0x2x16 Port Analog Switch | AF617A |

Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/11834\\_div/11834\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html)  
(Worldwide)

**HP Server Console Switch G2 with Virtual Media & CAC**

|  |        |
|--|--------|
| HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software | AF618A |
| HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software | AF619A |

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13475\\_div/13475\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html)  
(Worldwide)

**HP IP Console Switch G2 with Virtual Media & CAC**

|   |        |
|---|--------|
| HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software  | AF620A |
| HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software | AF621A |
| HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software | AF622A |

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13474\\_div/13474\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html)  
(Worldwide)

**Rack Kits**

|   |            |
|---|------------|
| HP ML350G6 Tower to Rack Conversion Kit | 534534-B21 |
|---|------------|

**HP USB and SD Options**

|                                      |            |
|--------------------------------------|------------|
| HP 1.44MB USB External Floppy Drive  | DC141B     |
| HP 2GB USB Flash Media Drive Key Kit | 608447-B21 |

**NOTE:** HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to [HP VMware Getting Started Guide](#) for installation instructions.

|                                       |            |
|---------------------------------------|------------|
| HP 4GB Secure Digital Flash Media Kit | 580387-B21 |
|---------------------------------------|------------|

**NOTE:** Blank SD media device is supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at <http://www.hp.com/go/proliantvirtualization>.

|                                      |            |
|--------------------------------------|------------|
| HP USB 2-Button Optical Scroll Mouse | DC172B     |
| HP USB Standard Keyboard US          | DT528A#ABA |



Additional Options

HP Care Pack Services Hardware Services On-site Service

|  |        |
|--|--------|
| HP 3 year 4 hour 13x5 ProLiant ML350 Hardware Support                | U4512E |
| HP 3 year 4 hour 24x7 ProLiant ML350 Hardware Support                | U4513E |
| HP 3 year 6 hour 24x7 Call to Repair ProLiant ML350 Hardware Support | U4514E |

Installation & Start-up Services

|                                   |        |
|-----------------------------------|--------|
| HP Install ProLiant ML350 Service | U4522E |
| HP Startup ProLiant ML350 Service | U4523E |

Support Plus

|   |        |
|---|--------|
| HP 3 year Support Plus Microsoft ProLiant ML350 Service | U4524E |
|---|--------|

Support Plus 24

|  |        |
|--|--------|
| HP 3 year Support Plus 24 Microsoft ProLiant ML350 Service | U4525E |
| HP 3 year Support Plus 24 SuSE ProLiant ML350 Service      | U6308E |



Memory

**NOTE:** Memory configurations listed do not apply to "Factory Integrated Models".

**DDR3 memory population guidelines**

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:  
[www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator)

Some DIMM installation guidelines are summarized below:

- For servers with eighteen (18) memory slots:
  - There are three (3) channels per processor; six (6) channels per server
  - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- If any Quad rank DIMMs are installed, all channels are limited to only 2 DIMMs per channel
- You can only install two quad-rank DIMMs per channel
- You can only install two UDIMMs per channel; if available, the third slot in the channel must remain empty
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the chipset
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4; 2,5; 3,6 on a 3DPC system or 1,4; 2,5; on a 2DPC system
- Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

| DIMM slot/capacity/populated speed table |                           |                |       |      |        |                |      |                                    |                |       |
|--|---------------------------|----------------|-------|------|--------|----------------|------|------------------------------------|----------------|-------|
| DIMM Type<br>->                          | Registered DIMMS (RDIMMs) |                |       |      |        |                |      | Unbuffered with ECC DIMMs (UDIMMs) |                |       |
| DIMM Rank<br>->                          | Single Rank (1R)          | Dual Rank (2R) |       |      |        | Quad Rank (4R) |      | Single Rank (1R)                   | Dual Rank (2R) |       |
| DIMM Capacity ->                         | 4GB                       | 2GB            | 4GB   | 8GB  | 8GB    | 4GB            | 16GB | 1GB                                | 2GB            | 4GB   |
| DIMM Native Speed (MHz) ->               | 1333                      | 1333           | 1333  | 1067 | 1333   | 1067           | 1067 | 1333                               | 1333           | 1333  |
| Voltage                                  | LV/Reg                    | Reg            | Reg   | Reg  | LV/Reg | Reg            | Reg  | Reg                                | Reg            | Reg   |
|  |                           |                |       |      |        |                |      |                                    |                |       |
| SLOTS THAT CAN BE POPULATED              |                           |                |       |      |        |                |      |                                    |                |       |
| 18 slot servers                          | 18                        | 18             | 18    | 18   | 18     | 12             | 12   | 12                                 | 12             | 12    |
|  |                           |                |       |      |        |                |      |                                    |                |       |
| MAXIMUM CAPACITY (GB)                    |                           |                |       |      |        |                |      |                                    |                |       |
| 18 slot servers                          | 72                        | 36             | 72    | 144  | 144    | 48             | 192  | 12                                 | 24             | 48    |
|  |                           |                |       |      |        |                |      |                                    |                |       |
| POPULATED DIMM SPEED (MHz)               |                           |                |       |      |        |                |      |                                    |                |       |
| 1 DIMM Per Channel                       | 1333                      | 1333           | 1333  | 1067 | 1333   | 1067           | 1067 | 1333                               | 1333           | 1333  |
| 2 DIMM Per Channel                       | 1333*                     | 1333*          | 1333* | 1067 | 1333*  | 800            | 800  | 1333                               | 1333           | 1333* |

Memory

|   |     |     |     |     |     |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3 DIMM Per Channel  | 800 | 800 | 800 | 800 | 800 | n/a | n/a | n/a | n/a | n/a |
| * - supported with ROM update via ROM Based Setup Utility (RBSU). UDIMM support is only on 12-slot servers. |     |     |     |     |     |     |     |     |     |     |

NOTES:

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, the maximum speed will be 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz
- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

| 18 DIMM SLOTS (9 per CPU node) |        |                  |        |                  |        |
|--------------------------------|--------|------------------|--------|------------------|--------|
|                                | CPU1   |                  | CPU2   |                  |        |
|                                | slot # | population order | slot # | population order |        |
| Chnl 1                         | 1      | G                | 1      | G                | Chnl 1 |
|                                | 2      | D                | 2      | D                |        |
|                                | 3      | A                | 3      | A                |        |
|                                |        |                  |        |                  |        |
| Chnl 2                         | 4      | H                | 4      | H                | Chnl 2 |
|                                | 5      | E                | 5      | E                |        |
|                                | 6      | B                | 6      | B                |        |
|                                |        |                  |        |                  |        |
| Chnl 3                         | 7      | I                | 7      | I                | Chnl 3 |
|                                | 8      | F                | 8      | F                |        |
|                                | 9      | C                | 9      | C                |        |

Standard memory configuration (1 CPU model)

- 6GB, consisting of three (3) 2GB dual-rank PC3-10600 RDIMMs (Base Model)

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; empty         | 1      | G; empty         | Chnl 1 |
|        | 2      | D; empty         | 2      | D; empty         |        |
|        | 3      | A; 2GB DIMM      | 3      | A; empty         |        |
|        |        |                  |        |                  |        |
| Chnl 2 | 4      | H; empty         | 4      | H; empty         | Chnl 2 |
|        | 5      | E; empty         | 5      | E; empty         |        |
|        | 6      | B; 2GB DIMM      | 6      | B; empty         |        |
|        |        |                  |        |                  |        |
| Chnl 3 | 7      | I; empty         | 7      | I; empty         | Chnl 3 |
|        | 8      | F; empty         | 8      | F; empty         |        |
|        | 9      | C; 2GB DIMM      | 9      | C; empty         |        |



Memory

Standard memory plus optional memory (1 CPU model)

- 54GB, consisting of three (3) 2GB RDIMMs plus six (6) 8GB RDIMMs (Base Model)
  - 3x 2GB dual-rank PC3-10600 RDIMMs
  - 6x 8GB dual-rank PC3-8500 RDIMMs

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; 8GB DIMM      | 1      | G; empty         | Chnl 1 |
|        | 2      | D; 8GB DIMM      | 2      | D; empty         |        |
|        | 3      | A; 2GB DIMM      | 3      | A; empty         |        |
| Chnl 2 | 4      | H; 8GB DIMM      | 4      | H; empty         | Chnl 2 |
|        | 5      | E; 8GB DIMM      | 5      | E; empty         |        |
|        | 6      | B; 2GB DIMM      | 6      | B; empty         |        |
| Chnl 3 | 7      | I; 8GB DIMM      | 7      | I; empty         | Chnl 3 |
|        | 8      | F; 8GB DIMM      | 8      | F; empty         |        |
|        | 9      | C; 2GB DIMM      | 9      | C; empty         |        |

Standard memory replaced with optional memory (1 CPU model)  
RDIMM maximum configuration (1 CPU model)

- 96GB, consisting of six (6) 16GB quad-rank PC3-8500 RDIMMs

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; empty         | 1      | G; empty         | Chnl 1 |
|        | 2      | D; 16GB DIMM     | 2      | D; empty         |        |
|        | 3      | A; 16GB DIMM     | 3      | A; empty         |        |
| Chnl 2 | 4      | H; empty         | 4      | H; empty         | Chnl 2 |
|        | 5      | E; 16GB DIMM     | 5      | E; empty         |        |
|        | 6      | B; 16GB DIMM     | 6      | B; empty         |        |
| Chnl 3 | 7      | I; empty         | 7      | I; empty         | Chnl 3 |
|        | 8      | F; 16GB DIMM     | 8      | F; empty         |        |
|        | 9      | C; 16GB DIMM     | 9      | C; empty         |        |

UDIMM maximum configuration (1 CPU model)

- 24GB, consisting of six (6) 4GB dual-rank PC3-10600 UDIMMs

Memory

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; empty         | 1      | G; empty         | Chnl 1 |
|        | 2      | D; 4GB DIMM      | 2      | D; empty         |        |
|        | 3      | A; 4GB DIMM      | 3      | A; empty         |        |
|        |        |                  |        |                  |        |
| Chnl 2 | 4      | H; empty         | 4      | H; empty         | Chnl 2 |
|        | 5      | E; 4GB DIMM      | 5      | E; empty         |        |
|        | 6      | B; 4GB DIMM      | 6      | B; empty         |        |
|        |        |                  |        |                  |        |
| Chnl 3 | 7      | I; empty         | 7      | I; empty         | Chnl 3 |
|        | 8      | F; 4GB DIMM      | 8      | F; empty         |        |
|        | 9      | C; 4GB DIMM      | 9      | C; empty         |        |

Standard memory replaced with optional memory (2 CPU model)  
RDIMM maximum configuration (2 CPU model)

- 192GB, consisting of twelve (12) 16GB quad-rank PC3-8500 RDIMMs

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; empty         | 1      | G; empty         | Chnl 1 |
|        | 2      | D; 16GB DIMM     | 2      | D; 16GB DIMM     |        |
|        | 3      | A; 16GB DIMM     | 3      | A; 16GB DIMM     |        |
|        |        |                  |        |                  |        |
| Chnl 2 | 4      | H; empty         | 4      | H; empty         | Chnl 2 |
|        | 5      | E; 16GB DIMM     | 5      | E; 16GB DIMM     |        |
|        | 6      | B; 16GB DIMM     | 6      | B; 16GB DIMM     |        |
|        |        |                  |        |                  |        |
| Chnl 3 | 7      | I; empty         | 7      | I; empty         | Chnl 3 |
|        | 8      | F; 16GB DIMM     | 8      | F; 16GB DIMM     |        |
|        | 9      | C; 16GB DIMM     | 9      | C; 16GB DIMM     |        |

UDIMM maximum configuration (2 CPU model)

- 48GB, consisting of twelve (12) 4GB dual-rank PC3-10600 UDIMMs

|        | CPU1   |                  | CPU2   |                  |        |
|--------|--------|------------------|--------|------------------|--------|
|        | slot # | population order | slot # | population order |        |
| Chnl 1 | 1      | G; empty         | 1      | G; empty         | Chnl 1 |
|        | 2      | D; 4GB DIMM      | 2      | D; 4GB DIMM      |        |
|        | 3      | A; 4GB DIMM      | 3      | A; 4GB DIMM      |        |
|        |        |                  |        |                  |        |
| Chnl 2 | 4      | H; empty         | 4      | H; empty         | Chnl 2 |
|        | 5      | E; 4GB DIMM      | 5      | E; 4GB DIMM      |        |
|        | 6      | B; 4GB DIMM      | 6      | B; 4GB DIMM      |        |
|        |        |                  |        |                  |        |
| Chnl 3 | 7      | I; empty         | 7      | I; empty         | Chnl 3 |
|        | 8      | F; 4GB DIMM      | 8      | F; 4GB DIMM      |        |
|        | 9      | C; 4GB DIMM      | 9      | C; 4GB DIMM      |        |

NOTE: Capacity references are rounded to the common Gigabyte values.



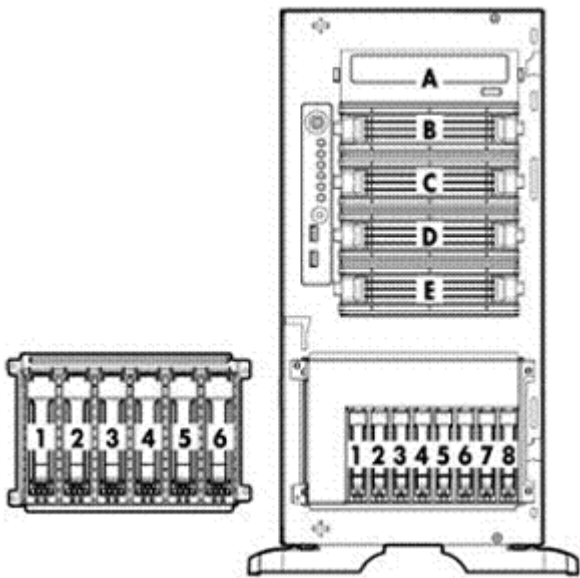
Memory

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

Following are memory options available from HP:

| Memory | Registered DIMMs (RDIMMs)  |            |
|--------|--|------------|
|        | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500656-B21 |
|        | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 593339-B21 |
|        | HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500658-B21 |
|        | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit  | 500662-B21 |
|        | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit   | 500666-B21 |
|        | HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit   | 500660-B21 |
|        | HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit   | 604504-B21 |
|        | HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit   | 604506-B21 |
|        | <b>NOTE:</b> Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors   |            |
|        | HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit  | 627812-B21 |
|        | <b>Unbuffered with ECC DIMMs (UDIMMs)</b>  |            |
|        | HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500668-B21 |
|        | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500670-B21 |
|        | HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit  | 500672-B21 |
|        | HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit   | 619488-B21 |
|        | <b>NOTE:</b> All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a> . |            |
|        | <b>NOTE:</b> Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <a href="http://h18004.www1.hp.com/products/servers/platforms/energyefficient/">http://h18004.www1.hp.com/products/servers/platforms/energyefficient/</a>  |            |

Storage



1 - 6    6 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays

Or

1 - 8    8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays

B,C,D,E Available half height media bays

A-E    Removable Optical Drive

D+E    8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays  
or  
2 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays

Drive Support

|   | Quantity Supported | Position Supported | Controller                 |
|---|--------------------|--------------------|----------------------------|
| Removable Media                           |                    |                    |                            |
| HP Half-Height SATA DVD-ROM Optical Drive | Up to 1            | A-E                | Integrated SATA Controller |
| HP Half-Height SATA DVD RW Optical Drive  | Up to 1            | A-E                | Integrated SATA Controller |

Hard Drives

**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**NOTE:** Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

|                     | Quantity Supported | Position Supported | Controller   |
|---------------------|--------------------|--------------------|--|
| 600GB 6G SAS 10K DP | Up to 16 SFF       | 1-8 and D+E        | HP Smart Array P800/512 BBWC Controller              |
| 450GB 6G SAS 10K DP |                    |                    | HP Smart Array P212/Zero Memory Controller           |
| 300GB 6G SAS 10K DP |                    |                    | HP Smart Array P212/ 256 MB Controller               |
| 146GB 6G SAS 15K DP |                    |                    | HP Smart Array P410/256 MB Controller                |
| 146GB 6G SAS 10K DP |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
| 72GB 6G SAS 15K DP  |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                     |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                     |                    |                    | HP Smart Array P411/256 MB Controller                |
|                     |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                     |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                     |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                     |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives



Storage

|                     | Quantity Supported | Position Supported | Controller   |
|---------------------|--------------------|--------------------|--|
| 600GB 6G SAS 15K DP | Up to 8 LFF        | 1-6 and D+E        | HP Smart Array P800/512 BBWC Controller              |
| 450GB 6G SAS 15K DP |                    |                    | HP Smart Array P212/Zero Memory Controller           |
| 300GB 6G SAS 15K DP |                    |                    | HP Smart Array P212/ 256 MB Controller               |
|                     |                    |                    | HP Smart Array P410/256 MB Controller                |
|                     |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
|                     |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                     |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                     |                    |                    | HP Smart Array P411/256 MB Controller                |
|                     |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                     |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                     |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                     |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

|                      | Quantity Supported | Position Supported | Controller   |
|----------------------|--------------------|--------------------|--|
| 2TB 6G SAS 2.7K DP   | Up to 6 LFF        | 1-6 and D+E        | HP Smart Array P800/512 BBWC Controller              |
| 1TB 6G SAS 2.7K DP   |                    |                    | HP Smart Array P212/Zero Memory Controller           |
| 1TB 3G SAS 7.2K DP   |                    |                    | HP Smart Array P212/ 256 MB Controller               |
| 750GB 3G SAS 7.2K DP |                    |                    | HP Smart Array P410/256 MB Controller                |
|                      |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
|                      |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                      |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                      |                    |                    | HP Smart Array P411/256 MB Controller                |
|                      |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                      |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                      |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                      |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

|                      | Quantity Supported | Position Supported | Controller   |
|----------------------|--------------------|--------------------|--|
| 500GB 6G SAS 7.2K DP | Up to 16 SFF       | 1-8 and D+E        | HP Smart Array P800/512 BBWC Controller              |
|                      |                    |                    | HP Smart Array P212/Zero Memory Controller           |
|                      |                    |                    | HP Smart Array P212/ 256 MB Controller               |
|                      |                    |                    | HP Smart Array P410/256 MB Controller                |
|                      |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
|                      |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                      |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                      |                    |                    | HP Smart Array P411/256 MB Controller                |
|                      |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                      |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                      |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                      |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SATA Hot Plug SFF (2.5-inch) Entry (ETY) Drives

|                      | Quantity Supported | Position Supported | Controller                                 |
|----------------------|--------------------|--------------------|--|
| 250GB 3G SATA 5.4K   | Up to 16           | 1-8 and D+E        | HP Smart Array P800/512 BBWC Controller    |
| 120GB 1.5G SATA 5.4K |                    |                    | HP Smart Array P212/Zero Memory Controller |
|                      |                    |                    | HP Smart Array P212/ 256 MB Controller     |
|                      |                    |                    | HP Smart Array P410/256 MB Controller      |

Storage

- HP Smart Array P410/512 MB BBWC Controller
- HP Smart Array P410/512 MB FBWC Controller
- HP Smart Array P410/1G FBWC Controller
- HP Smart Array P411/256 MB Controller
- HP Smart Array P411/512 MB BBWC Controller
- HP Smart Array P411/512 MB FBWC Controller
- HP Smart Array P411/1G FBWC Controller
- HP Smart Array P812/1G Flash Backed Cache Controller

**NOTE:** HP Systems Insight Manager should not be used to view the status of SATA hard drives and SATA RAID configurations.

SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives

|                    | Quantity Supported | Position Supported | Controller   |
|--------------------|--------------------|--------------------|--|
| 250GB 3G SATA 7.2K | Up to 8            | 1-6 and D+E        | HP Smart Array P800/512 BBWC Controller              |
| 160GB 3G SATA 7.2K |                    |                    | HP Smart Array P212/Zero Memory Controller           |
|                    |                    |                    | HP Smart Array P212/ 256 MB Controller               |
|                    |                    |                    | HP Smart Array P410/256 MB Controller                |
|                    |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
|                    |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                    |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                    |                    |                    | HP Smart Array P411/256 MB Controller                |
|                    |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                    |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                    |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                    |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

|                    | Quantity Supported | Position Supported | Controller   |
|--------------------|--------------------|--------------------|--|
| 500GB 3G SATA 7.2K | Up to 16           | 1-8 and D+E        | HP Smart Array P800/512 BBWC Controller              |
| 160GB 3G SATA 7.2K |                    |                    | HP Smart Array P212/Zero Memory Controller           |
|                    |                    |                    | HP Smart Array P212/ 256 MB Controller               |
|                    |                    |                    | HP Smart Array P410/256 MB Controller                |
|                    |                    |                    | HP Smart Array P410/512 MB BBWC Controller           |
|                    |                    |                    | HP Smart Array P410/512 MB FBWC Controller           |
|                    |                    |                    | HP Smart Array P410/1G FBWC Controller               |
|                    |                    |                    | HP Smart Array P411/256 MB Controller                |
|                    |                    |                    | HP Smart Array P411/512 MB BBWC Controller           |
|                    |                    |                    | HP Smart Array P411/512 MB FBWC Controller           |
|                    |                    |                    | HP Smart Array P411/1G FBWC Controller               |
|                    |                    |                    | HP Smart Array P812/1G Flash Backed Cache Controller |

SATA Hot Plug 3.5" Midline (MDL) Drives

|                    | Quantity Supported | Position Supported | Controller                                 |
|--------------------|--------------------|--------------------|--|
| 2TB 3G SATA 7.2K   | Up to 8            | 1-6 and D+E        | HP Smart Array P800/512 BBWC Controller    |
| 1TB 3G SATA 7.2K   |                    |                    | HP Smart Array P212/Zero Memory Controller |
| 750GB 3G SATA 7.2K |                    |                    | HP Smart Array P212/ 256 MB Controller     |
| 500GB 3G SATA 7.2K |                    |                    | HP Smart Array P410/256 MB Controller      |
| 250GB 3G SATA 7.2K |                    |                    | HP Smart Array P410/512 MB BBWC Controller |
|                    |                    |                    | HP Smart Array P410/512 MB FBWC Controller |
|                    |                    |                    | HP Smart Array P410/1G FBWC Controller     |
|                    |                    |                    | HP Smart Array P411/256 MB Controller      |



Storage

HP Smart Array P411/512 MB BBWC Controller  
HP Smart Array P411/512 MB FBWC Controller  
HP Smart Array P411/1G FBWC Controller  
HP Smart Array P812/1G Flash Backed Cache Controller

SATA Hot Plug Midline (MDL) Solid State Drives

|                     | Quantity Supported | Position Supported | Controller   |
|---------------------|--------------------|--------------------|--|
| 60GB 3.0G SATA SSD  | Up to 16           | 1-8 and D+E        | HP Smart Array P212/Zero Memory Controller   |
| 120GB 3.0G SATA SSD |                    |                    | HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

|                     | Quantity Supported | Position Supported | Controller   |
|---------------------|--------------------|--------------------|--|
| 60GB 3.0G SATA SSD  | Up to 8            | 1-6 and D+E        | HP Smart Array P212/Zero Memory Controller   |
| 120GB 3.0G SATA SSD |                    |                    | HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |

External Storage

|                        | Quantity Supported | Position Supported | Host Controller or Adapter  |
|------------------------|--------------------|--------------------|---|
| 60 Modular Smart Array | Up to 4            | External           | HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/256 MB Controller   |
|                        | Up to 8            | External           | HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller<br>HP Smart Array P800 Controller |
| 70 Modular Smart Array | Up to 2            | External           | HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/256 MB Controller   |



Storage

|  |                    |          |   |
|--|--------------------|----------|---|
|  | Up to 4            | External | HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller<br>HP Smart Array P800 Controller |
| HP 2000sa Modular Smart Array Controller | Up to 4            | External | HP SC08Ge Host Bus Adapter  |
| D2700 Disk Enclosure                     | Up to 2<br>Up to 4 | External | HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller                                   |

Tape and Disk-Based Backup

**NOTE:** For the complete range of StorageWorks tape drives, autoloaders, libraries and media, including the internal fitting models, see: <http://www.hp.com/go/tape>. For the complete range of StorageWorks D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of StorageWorks RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP StorageWorks disk and tape backup products see: <http://www.hp.com/go/connect>.

|   | Position Supported   | Controller  | Controller/HBA Option Kit Part Number |
|---|----------------------|---|---------------------------------------|
| <b>HP StorageWorks SCSI Tape Drives</b><br>LTO-1 Ultrium 232<br>LTO-2 Ultrium 448<br>LTO-3 Ultrium 920<br>LTO-3 Ultrium 960<br>LTO4 Ultrium 1760<br>LTO-4 Ultrium 1840<br>DAT 40<br>DAT 72<br>DAT 160 | Internal or External | HP SC11Xe Host Bus Adapter<br>HP U320e SCSI Dual Channel Controller<br><b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> | 412911-B21<br>AH627A                  |
| <b>HP StorageWorks SCSI Rack Mount Kits</b><br>1U Rack-Mount Kit<br>3U Rack-Mount Kit   | External             | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter  | 412911-B21                            |
| <b>HP StorageWorks USB Tape Drives</b><br>DAT 40<br>DAT 72<br>DAT 160<br>DAT 320  | Internal or External | USB 2.0 Port  | N/A                                   |
| <b>HP StorageWorks USB Rack Mount Kits</b><br>1U USB Rack-Mount Kit   | External             | USB 2.0 Port  |                                       |
| <b>HP StorageWorks SAS Tape Drives</b><br>DAT 160   | Internal or External | HP Modular Smart Array SC44Ge 1-ports Int/1-ports Ext PCIe x8 SAS Host Bus Adapter<br><b>NOTE:</b> Please check the full compatibility information at:  | 416096-B21                            |



Storage

|   |                      |  |                      |
|---|----------------------|--|----------------------|
| DAT 320   |                      | <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>  |                      |
| LTO-2 Ultrium 448   |                      |  |                      |
| LTO-3 Ultrium 920   |                      |  |                      |
| LTO-4 Ultrium 1760  |                      |  |                      |
| LTO-4 Ultrium 1840  |                      |  |                      |
| LTO-5 Ultrium 3000  |                      |  |                      |
| LTO-5 Ultrium 3280  |                      |  |                      |
| <b>HP StorageWorks SAS Rack Mount Kits</b><br>1U Rack-Mount Kit<br>3U Rack-Mount Kit                            | External             | HP Modular Smart Array SC44Ge 1-ports Int/1-ports Ext PCIe x8 SAS Host Bus Adapter<br><b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> | 416096-B21           |
| <b>HP StorageWorks SCSI Tape Autoloaders</b><br>DAT 72x10 Autoloader<br>1/8 G2 Autoloader                       | External             | HP SC11Xe Host Bus Adapter<br>HP U320e SCSI Dual Channel Controller  | 412911-B21<br>AH627A |
| <b>HP StorageWorks SCSI Tape Libraries</b><br>MSL2024<br>MSL4048<br>MSL8096<br>MSL6000                          | External             | HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter<br><b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>                           | AH627A               |
| <b>HP StorageWorks SAS Tape Autoloaders and Libraries</b><br>1/8 G2 Autoloader<br>MSL2024<br>MSL4048<br>MSL8096 | External             | HP Modular Smart Array SC44Ge 1-ports Int/1-ports Ext PCIe x8 SAS Host Bus Adapter<br><b>NOTE:</b> Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> | 416096-B21           |
| <b>HP StorageWorks Fibre Channel Tape Libraries</b><br>MSL2024<br>MSL4048<br>MSL8096<br>MSL6000                 | External             | Please consult the EBS connectivity matrix at: <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpec.                      |                      |
| <b>HP StorageWorks USB RDX Removable Disk Backup System</b><br>RDX160<br>RDX320<br>RDX500<br>RDX750<br>RDX1TB   | Internal or External | USB 2.0 port   | N/A                  |
| <b>HP StorageWorks D2D Backup Systems, iSCSI</b><br>D2D2500i<br>D2D4000i  | External             | Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.  |                      |



Storage

HP StorageWorks D2D  
Backup Systems, Fibre  
Channel  
D2D4000fc

External

Direct server attach is not supported, requires connection via  
SAN fabric. See: <http://www.hp.com/go/connect>



### Power Specifications

| HP 460W CS HE Power Supply Kit               |            |      |      |      |      |      |      |
|--|------------|------|------|------|------|------|------|
| Part Number                                  | 503296-B21 |      |      |      |      |      |      |
| Input Voltage Range (Vrms)                   | 100 to 240 |      |      |      |      |      |      |
| Frequency Range (Nominal) (Hz)               | 50/60      |      |      |      |      |      |      |
| Nominal Input Voltage (Vrms)                 | 100        | 120  | 200  | 208  | 220  | 230  | 240  |
| Maximum Rated Output Wattage Rating          | 460        | 460  | 460  | 460  | 460  | 460  | 460  |
| Nominal Input Current (A rms)                | 5.5        | 4.5  | 2.6  | 2.5  | 2.4  | 2.3  | 2.2  |
| Maximum Rated Input Wattage Rating (Watts)   | 526        | 520  | 505  | 505  | 503  | 503  | 503  |
| Maximum Rated VA (Volt-Amp)                  | 548        | 542  | 527  | 527  | 524  | 524  | 524  |
| Efficiency (%)                               | 87.5       | 88.5 | 91   | 91   | 91.5 | 91.5 | 91.5 |
| Power Factor                                 | 0.97       |      |      |      |      |      |      |
| Leakage Current (mA)                         | 0.42       | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak)              | 30         |      |      |      |      |      |      |
| Maximum Inrush Current duration (mS)         | 20         |      |      |      |      |      |      |
| Maximum British Thermal Unit Rating (BTU-Hr) | 1794       | 1773 | 1725 | 1725 | 1715 | 1715 | 1715 |

| HP 750W CS HE Power Supply Kit               |            |      |      |      |      |      |      |
|--|------------|------|------|------|------|------|------|
| Part Number                                  | 512327-B21 |      |      |      |      |      |      |
| Input Voltage Range (Vrms)                   | 100 to 240 |      |      |      |      |      |      |
| Frequency Range (Nominal) (Hz)               | 50/60      |      |      |      |      |      |      |
| Nominal Input Voltage (Vrms)                 | 100        | 120  | 200  | 208  | 220  | 230  | 240  |
| Maximum Rated Output Wattage Rating          | 750        | 750  | 750  | 750  | 750  | 750  | 750  |
| Nominal Input Current (A rms)                | 8.9        | 7.4  | 4.3  | 4.1  | 3.9  | 3.7  | 3.6  |
| Maximum Rated Input Wattage Rating (Watts)   | 857        | 847  | 824  | 825  | 820  | 820  | 820  |
| Maximum Rated VA (Volt-Amp)                  | 894        | 884  | 859  | 859  | 854  | 854  | 854  |
| Efficiency (%)                               | 87.5       | 88.5 | 91   | 91   | 91.5 | 91.5 | 91.5 |
| Power Factor                                 | 0.97       |      |      |      |      |      |      |
| Leakage Current (mA)                         | 0.42       | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak)              | 30         |      |      |      |      |      |      |
| Maximum Inrush Current duration (mS)         | 20         |      |      |      |      |      |      |
| Maximum British Thermal Unit Rating (BTU-Hr) | 2925       | 2892 | 2812 | 2812 | 2797 | 2797 | 2797 |

Power Specifications

| HP 1200W CS HE Power Supply Kit              |            |      |      |      |      |      |      |
|--|------------|------|------|------|------|------|------|
| Part Number                                  | 500172-B21 |      |      |      |      |      |      |
| Input Voltage Range (Vrms)                   | 100 to 240 |      |      |      |      |      |      |
| Frequency Range (Nominal) (Hz)               | 50/60      |      |      |      |      |      |      |
| Nominal Input Voltage (Vrms)                 | 100        | 120  | 200  | 208  | 220  | 230  | 240  |
| Maximum Rated Output Wattage Rating          | 800        | 900  | 1200 | 1200 | 1200 | 1200 | 1200 |
| Nominal Input Current (A rms)                | 9.7        | 9.0  | 7.0  | 6.8  | 6.4  | 6.1  | 5.9  |
| Maximum Rated Input Wattage Rating           | 930        | 1034 | 1348 | 1348 | 1348 | 1348 | 1348 |
| Maximum Rated VA (Volt-Amp)                  | 970        | 1079 | 1406 | 1406 | 1406 | 1406 | 1406 |
| Efficiency (%)                               | 86         | 87   | 89   | 89   | 89   | 89   | 89   |
| Power Factor                                 | 0.97       |      |      |      |      |      |      |
| Leakage Current (mA)                         | 0.42       | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak)              | 30         |      |      |      |      |      |      |
| Maximum Inrush Current duration (mS)         | 20         |      |      |      |      |      |      |
| Maximum British Thermal Unit Rating (BTU-Hr) | 3174       | 3530 | 4600 | 4600 | 4600 | 4600 | 4600 |

**NOTE:** To review typical system power ratings use the HP Power Advisor which is available online located at url: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor).

**NOTE:** Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Technical Specifications

|  |  |   |   |  |
|--|--|---|---|--|
| System Unit                                      | <b>Tower Dimensions</b><br>(H x W x D)<br>(with feet/bezel)  | 18.5 x 8.59 x 23.46 in (47 x 21.8 x 59.6 cm)  |   |  |
|  | <b>Rack Dimensions</b><br>(H x W x D)<br>(with feet/bezel)   | 8.54 x 17.5 x 21.9 in. (21.7 x 44.5 x 55.7cm)   |   |  |
|  | <b>Tower Weight</b><br>(approximate)   | Maximum<br>(all hard drives, power<br>supplies, and processors<br>installed)  | 70 lb (31.8 kg)                               |  |
|  |  | Minimum<br>(one hard drive, power<br>supply, and processor<br>installed)  | 54 lb (24.5 kg)                               |  |
|  | <b>Rack Weight</b><br>(approximate)  | Maximum<br>(all hard drives, power<br>supplies, and processors<br>installed)  | 66 lb (29.9 kg)                               |  |
|  |  | Minimum<br>(one hard drive, power<br>supply, and processor<br>installed)  | 48 lb (21.8 kg)                               |  |
|  | <b>Input Requirements</b><br>(per power supply)  | Rated Line Voltage  | 100 to 240 VAC                                |  |
|  |  | Rated Input Current   | 7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC) |  |
|  |  | Rated Input Frequency   | 50 to 60 Hz                                   |  |
|  |  | Rated Input Power   | 852 W   |  |
| <b>BTU Rating</b>                                | Maximum  | 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC)  |   |  |
|  |  | 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)  |   |  |
|  |  | 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)   |   |  |
|  |  |   |   |  |
| <b>Power Specifications</b>                      | To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL:<br><a href="http://www.hp.com/go/proliant-energy-efficient">www.hp.com/go/proliant-energy-efficient</a> |   |   |  |
|  | - Click on the system of interest. Example: ML350 G6   |   |   |  |
|  | - Follow the instructions of the next screens.   |   |   |  |
| <b>Power Supply Output</b><br>(per power supply) | Rated Steady-State Power   | 460(750) W (at 100 VAC),<br>460(750) W (at 200 VAC)   |   |  |
|  | Maximum Peak Power   | 460(750) W (at 100 VAC),<br>460(750) W (at 200 VAC)   |   |  |
|  | <b>NOTE:</b> See Power Supply Specifications tables for complete details on 460W PSU and optional 750W and 1200W Power Supply Options.   |   |   |  |
| <b>System Inlet Temperature</b>                  | Operating  | 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options |   |  |
|  |  |   |   |  |



Technical Specifications

|                                       |  |   |
|---------------------------------------|--|---|
|                                       |  | installed.<br>System performance may be reduced if operating with a fan fault or above 30°C (86°F).   |
| Relative Humidity<br>(non-condensing) | Non-operating  | -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).  |
|                                       | Operating  | 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.   |
| Altitude                              | Non-operating  | 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.   |
|                                       | Operating  | 3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). |
| Acoustic Noise                        | Non-operating  | 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).  |
|                                       | Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). |   |
| Emissions<br>Classification (EMC)     | Idle   |   |
|                                       | L WAd  | 4.7 B (1P Non-Redundant)<br>4.6 B (2P Redundant)  |
|                                       | L pAm  | 32.48dB (1P Non-Redundant)<br>31.18dB (2P Redundant)  |
|                                       | Operating  |   |
|                                       | L WAd  | 4.8 B (1P Non-Redundant)<br>4.7 B (2P Redundant)  |
|                                       | L pAm  | 32.39dB (1P Non-Redundant)<br>31.62dB (2P Redundant)  |
|                                       | <b>NOTE:</b> The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.   |   |
|                                       | FCC Rating   | Class B   |
|                                       | Normative Standards  | CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1                       |
|                                       | <b>NOTE:</b> Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.   |   |

Technical Specifications

|  |  |  |  |
|--|--|--|--|
| Smart Array P410i Controller                                 | Dimensions   | Embedded   |  |
|  | Disk Drive and Enclosure Interface - Transfer rate | 6Gb/s SAS (Serial Attached SCSI)<br>3Gb/s SATA (Serial ATA)  |  |
|  | SAS Connectors                                     | 2 internal 4X connectors   |  |
|  | Cache Memory Speed                                 | DDR2-800MHz with 40 or 72-bit wide bus   |  |
|  | Server Interface                                   | x4 PCIe 2.0 provides 2GB/s maximum bandwidth   |  |
|  | SAS Speed  | 8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth  |  |
|  | Cache Memory                                       | Zero Memory RAID has no cache memory<br>40-bit 256MB ECC protected cache (battery upgrade available)<br>72-bit 512MB BBWC or 72-bit 512MB and 1G FBWC  |  |
|  | Logical Drives Supported                           | Zero Memory, Up to 2 logical volumes (8 physical drives)<br>Up to 64 logical drives with cache   |  |
|  | Host Memory Addressing                             | 64-bit, supporting greater than 4GB server memory space  |  |
|  | RAID Support                                       | RAID 6, 6+0 (Advanced Data Guarding)<br><b>NOTE:</b> RAID 6, 6+0 can be enabled with one of the following combinations: <ul style="list-style-type: none"><li>256 MB cache, Battery kit and Smart Array Advanced Pack License key option upgrades</li><li>512 MB BBWC/FBWC and Smart Array Advanced Pack License key option upgrades</li><li>1G FBWC and Smart Array Advanced Pack License key option upgrades</li></ul> RAID 5, 5+0 (Distributed Data Guarding)<br><b>NOTE:</b> A minimum of 256 MB cache is required to enable RAID 5, 5+0 support<br>RAID 1+0 (Striping & Mirroring)<br>RAID 0 (Striping), RAID 1 (Mirroring) |  |
|  |  |  |  |
|  |  |  |  |
| Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | Network Interface                                  | 10Base-T/100Base-TX/1000Base-TX  |  |
|  | Compatibility                                      | IEEE 802.3 10Base-T<br>IEEE 802.3ab 1000Base-T<br>IEEE 802.3u 100Base-TX   |  |
|  | Data Transfer Method                               | PCI Express, four lanes (x4)   |  |
|  | Controller   | BCM5715  |  |
|  | Network Transfer Rate                              | 10Base-T (Half-Duplex)   | 10 Mb/s  |
|  |  | 10Base-T (Full-Duplex)   | 20 Mb/s  |
|  |  | 100Base-TX (Half-Duplex)   | 100 Mb/s                                       |
|  |  | 100Base-TX (Full-Duplex)   | 200 Mb/s                                       |
|  |  | 1000Base-TX (Half and Full-Duplex)   | 2000Mb/s                                       |
|  | Connector  | RJ-45  |  |
|  | Cable Support                                      | 10Base-T   | Categories 3, 4 or 5 UTP; up to 328 ft (100 m) |
|  |  | 10/100/1000Base-TX   | Category 5 UTP; up to 328 ft (100 m)           |
|  |  |  |  |

Technical Specifications

|  |  |  |
|--|--|--|
| Environment-friendly<br>Products and<br>Approach | End-of-life<br>Management and<br>Recycling | <p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p> |
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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.